The Builder.

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ILLUSTRATIONS.

"Science and Art": Relief.....Mr. Albert H. Hodge, Sculptor.
County Hall, Northallerton .....Mr. W. H. Brierley, Architect.
Penn House, Weston: as altered .....Mr. R. Blomfield, F.S.A., Architect.
Blackwood House, Byfleet.....Mr. G. L. Sutcliffe, A.R.I.B.A., Architect.

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The Ancient Buildings of Nippur.

IT is hard to say what reasons led up to the building of the great Temple of Bel and its adjoining city at such a site as Nippur. We know, of course, that the Shatt en-Nil, one of the finest waterways of the Babylonian canal system, ran past the temple; and we may conjecture that in very early days some kind of stream existed there; but even so, why should that exact spot have been selected rather than one further north or south? For there is no rise in the plain to account for the builders' preference; the country stretches away in all directions flat as a table-top, the only break in its level being the mounds that cover the ruins of ancient cities, of which, it is safe to say, none were older than Nippur. In all probability chance had much to do with the founding of the city. For some reason the site became intimately associated with the cult of the god; and from the seedling of a primitive shrine or altar erected in his honour the vast temple gradually grew and spread, until in the earliest days of which we know anything certain as yet it was the most venerated sanctuary in the land. And when at last the outworn worship of Bel was cast aside, the ruins of his city and temple formed a convenient platform for the erection of other buildings. There are ample grounds for supposing that the site was occupied six or seven thousand years before Christ; it is certain that it was still the scene of man's dwellings so late as 800 A.D., although it had sunk to an insignificant position early in the III[rd.] century; and it was not utterly abandoned until two hundred years later.

Throughout the long centuries of its history, during which it was the scene of much activity in the way of building and restorations, its architects must have been greatly hampered by the lack of any material other than the Mesopotamian mud. In the north stone could be obtained with comparative ease, but at Nippur there was nothing but the mud and clay available. When, in addition to this fact, we remember the extreme antiquity of the site, and consider that the early builders had no experience acquired from other nations to aid them, being, in fact, pioneers in the building world—instead of wondering at the crudeness of their structures, we are forced to admire the success they achieved in face of the difficulties that confronted them. In order to present a picture of the buildings thus far uncovered by the American expedition which has been excavating at the mounds it is necessary in the first place to describe the materials used in their construction. It will then be seen how the lack of stone and the scarcity of suitable timber necessitated clumsy makeshifts and fettered the ambitions of the architects, forcing them into narrow channels that led to the evolution of a style in which ponderosity took the place of grace, and massiveness was substituted for beauty and finish.

For our purpose the history of the site may be divided into three periods:—(*a*) Before Sargon (*c.* 3,800 B.C.); (*b*) from Sargon and his son, Naram-Sin, to Ashurbanipal (668-626 B.C.); and (*c*) post-Babylonian. In dating the buildings the different styles of bricks used have proved extremely helpful. Naturally the inscribed bricks are usually easy to determine; but the uninscribed specimens also, especially the burnt ones, show considerable variations at different periods. To enter into the peculiarities of the differing types and to give even average dimensions of them would take up too much space for the limits of this article. It must suffice to give a few examples and to mention the chief characteristics of those used in the buildings described.

The earliest builders doubtless used sun-dried bricks only; but, though the precise date at which the art of burning bricks was first practised at Nippur cannot be given, it is certain that it was a very early one. It is a point worthy of mention that the pre-Sargonic burnt bricks in point of size and shape are much more like the standard of to-day than were those of a later period. The first examples were 8¾ in. by 5⅝ in. by 2¼ in.; the next, 10¼ in. by 7 in. by 2½ in.; then comes a larger but flatter brick, 11½ in. by 7 in. by 1¾ in.; and, finally, 12 in. by 7¾ in. by 1⅞ in. In the first examples the shape is peculiar, for one face is markedly convex, and on the hump there is generally a deep thumb-mark

(and sometimes as many as four), probably intended to give a better grip for the mortar. In subsequent examples the thumb-mark becomes less pronounced and a longitudinal mark, made with the finger-tip or with a cut reed, appears in conjunction with it. Finally, the thumb-mark disappears entirely, and two or more of the reed-marks take its place. In some examples the bricks are marked along their edges with a depression, which seems to have been made either with a finger or a reed when they were being taken from the mould. In building drains and wells, for which they were largely used, the bricks were usually set on edge and at an angle, alternate courses sloping in opposite directions, and thus forming a kind of herring-boning; and it may be noted that in early Babylonian writing the sign for "brick" represents rows laid in this fashion. These bricks were usually laid in mud, but in watercourses and at certain spots where extra strength was required bitumen was employed, being brought, no doubt, then as now, from the famous springs at Hit. That the builders were quite alive to the superior qualities of stone is shown by the fact that it was employed for the foundations of the earliest gateway that was uncovered, where blocks of gypsum set in bitumen occur in the foundations. They also exhibited considerable skill in making vertical and horizontal drains and sinks of terra-cotta, U-shaped channels for water-courses, drain-pipes of various shapes and sizes, and large vases and jars.

In the second period a great change takes place. The burnt bricks are henceforth always made in a square, or nearly square, mould, and, losing all trace of convexity, become flat. Moreover, they very generally are stamped with a short cuneiform inscription setting forth the names and titles of the king for whom they were made, while no example of an inscription on a pre-Sargonic brick has been found at Nippur. The inscription was nearly always placed on one of the larger faces of the brick, which was carefully laid face downwards (except in the case of such bricks as were re-used by later builders); but at least one brick was found with an inscription* upon its edge. Stone makes its appearance in the form of finely cut and polished door-sockets. A few glazed bricks of the time of Ashurbanipal were found by Dr. Peters, the first director of the American work. And bitumen is employed liberally, especially in the construction of watercourses and aqueducts.

In the last period burnt bricks are not so commonly made use of, and those employed are generally old ones obtained from the earlier structures, but in certain parts we find specially-moulded ones. The unbaked bricks are often made of material obtained by breaking up older ones, and in very many cases contain coins, beads, cylinders, and objects of a similar character, which were doubtless intended as amulets and offerings to secure good fortune to the building. In some instances plaster is used as a finish to the walls and for stuccoing.

Until the work of excavating is carried further it will be impossible to offer more than a few detached notes upon the pre-Sargonic constructions, for in nearly all cases they lie buried deep beneath the buildings of a later period, nearly a score of distinct strata being discernible at some parts of the site. But sufficient remains have been uncovered already to show that at a very remote period the civilisation of Nippur was in an astonishing state of advancement. One of the most interesting discoveries made was that of an arch which was certainly constructed about six thousand years ago. It was built in connexion with the highly-elaborated system of drainage of the Temple of Bel, and served to protect two pipes (each about 8 in. in diameter) which carried the water from different directions to a point within the temple enclosure. In passing it may be noted that numbers of small pipes, specially moulded in T-form, were discovered in the neighbourhood of this drain, and that Dr. Hilprecht, the scientific director of the excavations, considers that they were "joints intended to unite terra-cotta pipes meeting each other at right angles." The twin pipes were made up from 2 ft. sections laid and jointed in clay and protected by walls of brick from which the arching sprung. The arch was built with burned bricks (12 in. by 6 in. by 2½ in.) of a light-yellow colour. Its curve was effected by the simple process of forming the joints between the bricks of wedges of the clay which was used as mortar; and above its crown was a small pipe, apparently intended to drain off any water that might soak through the soil and threaten the arch itself. The vaulting was strengthened by a pier in the centre which carried a horizontal support; and that this strutting was a well-considered addition to the primitive bit of building was clearly demonstrated when upon its removal the arch itself settled seriously under the heavy weight above it. Apparently the drain had caused some difficulty to later builders, for above it we found a most solidly-built foundation, in the form of an L, with the angle corresponding to that of the ziggurat above it. This foundation block was built with particularly well-made crude bricks (averaging 16 in. square by 3½ in. thick), its arms were about 12 ft. thick, and it was 11 ft. in depth. Above the end of the vaulted drain and parallel with the face of the ziggurat ran a dwarf wall or curbing of pre-Sargonic burned bricks, its base being 10 ft. above the bottom of the drain. This probably marks the boundary of one of the earliest enclosures of the temple; and it seems extremely likely that the two pipes of the drain met originally at the angle of the ziggurat of the corresponding period; for we shall see that the latter building was frequently enlarged by successive kings and governors. Within the enclosure and to the west of the drain stood a rectangular structure, built of crude bricks laid in bitumen, with a slightly-hollowed top, which has been shown by Dr. Hilprecht to be a crematorium.

The evidence of the trenches indicates that in these very early days of its history the temple was comparatively a small building. That the ziggurat existed before Naram Sin is beyond doubt, but it is impossible to say at present how large it was or whether it was built of crude brick only, or, like the later structures, was faced with burned bricks. It will therefore be advisable to leave all description of the temple proper to a later paragraph, merely pointing out that the main features of the building were preserved throughout its history, although their dimensions were slightly varied from time to time.

But before leaving this period mention must be made of the gateway which was discovered in the line of the city wall to the north of the temple, for it serves to show what the pre-Sargonic builders could do with their unhandy bricks. It lay beneath the present level of the plain, and unfortunately much of the material used in its construction had been removed by later builders; but happily of the lower portions a complete side remained, and there was just sufficient of the opposite side left to enable us to determine the width of the opening and to gather a clear idea of the plan of the gateway. The wall itself was built of crude bricks, but the gate of burnt bricks. Its face projected beyond the main line of wall, and from front to back of the gate was a distance of 35 ft. At the centre lay a roadway, 12 ft. wide, for the use of vehicles and beasts of burden; while on either side was a pathway, 4 ft. wide, for pedestrians. The central portion, the road, sloped gradually upwards from the exterior, was paved with bricks, and at its centre there seems to have been a stone stop for the gate to close against. Under this portion of the structure and the edges of the footways lay the foundation of gypsum blocks which has been mentioned above. On either side of the roadway the walls of the footway were built with a batter, and a dwarf wall ran along the side of the walk next to the road. The footways themselves were approached by short flights of steps, in which the tread of each step is slightly narrower than the one below it. Another point to be mentioned is that the stairway is slightly wider at its foot than at its head, being narrowed by stepped recesses This characteristic feature of Babylonian gateways was found in a more advanced stage in all the entrances to the temple, and will be noticed lower. The gateway had plainly been rebuilt at a later period (but still pre-Sargonic), when the direction of the wall had been somewhat altered, as was shown by the difference in the axes of the two stairways. Probably a period of three or four hundred years elapsed between the building of the first and second gates, for there is a difference in their levels of nearly 4 ft. In the second structure the bricks used are larger than those of the earlier one, but its character was quite similar. At both periods, it is almost certain, a moat or canal lay outside the wall, and the gateway was probably approached by means of a bridge.

The remains of the second period are very ample, and although the excavations are by no means complete, sufficient material is already at hand to present an intelligible picture of the famous temple and certain other buildings of importance. It is necessary to observe,

* Of Shagarakti-Shuriash, King of Babylon (*circa* 1350 B.C.).

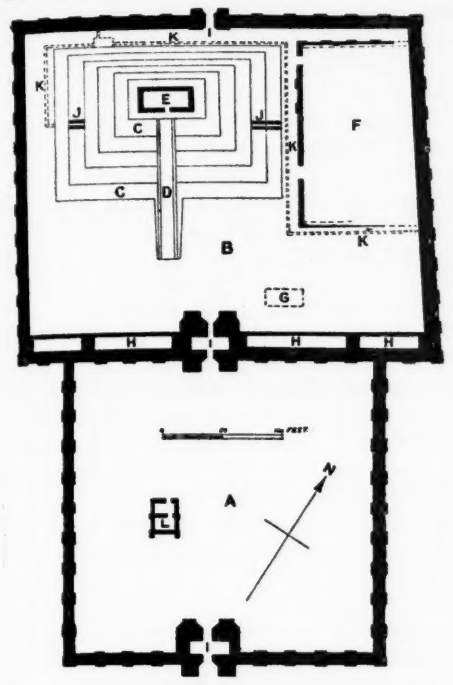


Fig. 1. *Sketch Plan of Temple of Bel (restored in accordance with Dr. Hilprecht's Theories).*

A—Outer Court.
B—Inner Court.
C—Ziggurat.
D—Approach to Do.
E—Shrine of Bel.
F—House of the God.
G—House for Honey, Cream, and Wine.
H—Storage Vaults.
I—Gates.
J—Water Conduits.
K—Water-Courses.
L—Chapel of Bel (one of many in this outer court).

NOTE.—A and F are to a great extent unexcavated, and the position of G is somewhat conjectural.

however, that in the short account given below it has been impossible to select the buildings of any particular period for description; for we are compelled to fill up the gaps in one period by the materials of others; but the conservatism of the builders, who were ever desirous of keeping the character of the holy place as constant as possible, enables us to make such restorations with so much certainty that the picture given may be regarded as quite reliable in all essential points.

The temple proper consisted of two courts, the outer one being open to worshippers, while the inner one was reserved for the priests and servants of the god (A and B, Fig. 1). In the former stood over a score of shrines, or "houses of the gods," who were worshipped at Nippur. In the latter were the great ziggurat (C, Fig. 1), the House of Bel (F, Fig. 1), a store house "for honey, cream, and wine" (G, Fig. 1), and possibly some smaller buildings. These two courts were encompassed by a wall, which is called in the inscriptions *Imgur Marduk* (Fig. 1).

At the sides and rear of these two courts stretched a very large enclosure. Behind the second court there lay outbuildings, more storehouses, servants' quarters, and so forth; and at the east angle, in all probability, stood the residence of the *patesis* of Nippur and the dwellings of the upper priests. These three sections—the two courts of the temple and the adjacent compound—which evidently constituted the sacred quarter of the city, lay on the east bank of the Shatt en-Nil, and were enclosed by *Nimit Marduk*, the outer wall. Whether the rest of the city was walled has not yet been ascertained, but probably it was not. The position of *Nimit Marduk* varied but slightly at different periods of the city's history; and that of *Imgur Marduk* was most likely constant—at any rate after the days of Naram Sin. It was in the line of *Nimit Marduk* that the pre-Sargonic gateway was discovered, and doubtless an entrance stood at practically the same spot throughout the succeeding centuries. Like the gateway, the wall itself was rebuilt from time to time, but the principal remains discovered by us belong to the time of Naram Sin (*c.* 3750 B.C.) and of Ur Gur (*c.* 2700 B.C.). Both the royal builders used crude bricks for the bulk of their work, Naram Sin employing huge specimens (19 in. by 19 in. by 3 in.), most of which were stamped, while Ur Gur's were much smaller and unstamped; but a finely-built water conduit was discovered at an outer angle of the former king's structure, built with burnt bricks laid in bitumen; and it is extremely likely that the gateways at least were faced with the same material.

Nimit Marduk was an imposing wall, solidly constructed, and worthy of its purpose. Its exterior was broken up by buttresses, spaced about 30 ft. apart, averaging 11 ft. in width and 2 ft. in depth. Both faces were built with a batter, and both were plastered with mud and clay. Its thickness in the days of Naram Sin remains undetermined, owing to the poor state of preservation of its inner face, but it was probably over 30 ft. In Ur Gur's time it was about 25 ft. 6 in. thick at its base. Nowhere does sufficient height remain to show the top, but it was probably about 20 ft. wide, and, on the bases of pictorial representations of similar structures, we may conclude that it was finished off with a battlemented parapet.

The best preserved portion of *Imgur Marduk* is found in the wall which separated the two courts of the temple. This is built of small crude bricks (about $8\frac{3}{4}$ in. by $6\frac{1}{2}$ in. by $3\frac{1}{4}$ in.), and, like the outer wall, has a batter and is divided by equally-spaced shallow buttresses into a series of panels. The lower portions of the gateway in this wall are well preserved. After the usual Babylonian custom its faces were decorated with narrow vertical panels, and it was narrowed by means of stepped recessing, the gateway itself being only 6 ft. wide, while the width between the pylons was 14 ft. In the thickness of the walling upon either side of the gate was a small chamber, apparently intended for the use of the door-keepers. The door turned upon a metal shod pivot, resting in a door-socket, which was built round with burned bricks specially moulded for the work. The royal builders were always extremely proud of their door-sockets, and were careful to inscribe their names and titles upon them. The one found in position at this entrance was originally used by Ur Gur, and its inscription, which Dr. Hilprecht has kindly interpreted for me, runs:—"To Bel, King of the countries, his king, Ur Gur, the powerful champion, King of Ur, King of Shumer and Accad, E-kur, his beloved temple, has consecrated." Ekur, it should be explained, was the old name of the temple, and "king of the countries" is simply another expression for "ruler of the world." The socket itself, as we found it, had been re-used, probably by Ashurbanipal, who placed it in position for his own entrance (Fig. 2). The doorway appears to have been approached by a causeway built up in shallow slant-steps of burnt brick. Inside the door stood a circular pedestal, built with shallow slabs of stone, and a curious tank, or box, of burned bricks; and the jambs of the doorway, at the later period, at least, were of burned brick.

In the wall behind the ziggurat (N.W.), and in line with this gate, we found a second one, of similar construction, but smaller and somewhat less elaborate; and there is every reason to suppose that a third gate of the same nature stood in the south-east wall of the outer court. This, of course, would be the entrance used by worshippers at the temple, who probably landed at a quay on the canal which branched off from the Shatt en-Nil in this direction, and joined the moat referred to in connexion with the pre-Sargonic gate.

Within the second enclosure, and at its west angle, was placed the ziggurat, or stage tower. It consisted of five platforms or stages, on the topmost of which

Fig. 2. *Photograph of Door-Socket*

stood a shrine of Bel; but at the present day traces of two stages only can be made out with any clearness, owing to the operations of later builders and the ravages of time. As has been observed already, the ziggurat grew from quite small beginnings, many kings helping to enlarge and improve it. Ur Gur faced it with burned brick and widened its causeway by adding walls of the same material on either side; later kings patched and repaired it, at the same time frequently laying a new pavement over the courtyard; and in Ashur-banipal's time it was a huge mass, 190 ft. by 128 ft. on plan, with panelled faces and cased throughout in burned brick. Its longer sides were the north-west and south-east. On each of its shorter sides was a watercourse (J, Fig. 1), similar to those structures found by Loftus at Warka, which he describes as buttresses (*comp.* "Chaldæa and Susiana," p. 167). They were constructed in burned brick, set in and finished with bitumen, and they drained the different stages of the ziggurat into a channel at its base (K, Fig. 1), which seems to have led to a shallow basin at the rear, whence another watercourse conducted the water outside the temple walls. The approach to the different platforms was placed on the S.E. face, nearly centrally; but it was not opposite the gateway, lying slightly to the south-west. It also was cased in burnt brick, and its walls had a slight batter. No remains of steps were found, but it is tolerably certain that the approach was made by stairs and not by a simple slope (D, Fig. 1).

In the north angle of the court stood the "house of Bel," the earthly residence of the god and his consort, Beltis. This building still awaits excavation; but we know that its outer walls were faced and panelled with burnt brick, and that bitumen was used liberally to make them waterproof, thus ensuring a dry dwelling for great Bel; and in the south-west façade two doorways have been discovered, one about 10 ft. and the other about 5 ft. wide. Also it is apparent that within the house were many small chambers and apartments, divided by walls of crude brick, and that some of them served for store chambers for the most valuable property of the temple. Between this house and the south-east wall of the court stood the "house for honey, cream, and wine." No actual remains of this store have yet been brought to light, its existence being known only by means of inscriptions; but my own belief is that it was built parallel with the courtyard wall, and to the right of the gateway, where traces of foundations of burned brick walling and steps were discovered (G, Fig. 1).

Lack of space forbids of any further description of the temple buildings. But sufficient has been written to show that the excavations have already served to alter several ideas that have hitherto been held with regard to Babylonian temples. The mere fact of the god having a "house," a shrine and a chapel in close proximity, is a significant point to note; and we can now see plainly that the ziggurat was not the only important part of the temple; but the discussion of such questions hardly falls within the scope of this article. It is unfortunate that the old buildings should have suffered as they have at the hands of later builders, for though they still present many interesting features, there are others, such as their decorative treatment internally and the manner of finishing off the tops of the gates and walls, concerning which we know practically nothing. What we do know may be summed up thus:—(*a*) The temple consisted of the two courts and their contained buildings. (*b*) The courts were paved with burned brick pavements, across which in various directions ran waterways, some formed of terra-cotta pipes or channelling set in brick, some only of brickwork lined with bitumen. (*c*) The outer court held many chapels dedicated to different gods and goddesses, but the inner one was kept for Bel alone, of whose buildings the ziggurat and the "residence" taken together may be regarded as the most holy portion of the temple. (*d*) While the walls of the courts were of crude brick only, the principal buildings were faced with burnt bricks. (*e*) The drainage of the temple was carefully considered and well devised. (*f*) The architects aimed at impressing beholders of their work by size rather than beauty and proportion; and (*g*) they very commonly failed in such matters as setting out their walls at right angles, but in point of strength they achieved wonderful success.

The library and schools of the old city lay on the same side of the Shatt en-Nil as the temple, but a branch canal separated the two quarters. The secular buildings were constructed almost entirely in crude brick, burned being used only occasionally for door jambs and thresholds. The impression gained from a study of the rooms thus far excavated (about eighty) is that they belonged to a number of distinct houses, opening off from narrow streets. They vary in size from about 9 ft. by 4 ft. to nearly 30 ft. by 15 ft. Although they were used for such important purposes, they must have been dark and cramped; it appears that very little pains were used to make them attractive, and nowhere did we find a second story. In some of the rooms we found ledges of brickwork covered with bitumen, which served as shelves for the clay tablets that constituted the library of this ancient university; but in all likelihood wooden shelves also were provided, for such numbers of tablets as have been discovered already could hardly have been stored on the ledges alone. It is noteworthy that even in the smaller apartments the walls are not at right angles in the majority of the rooms—an observation that applies to most of the shops and houses discovered at other portions of the site also. But since these buildings were nearly always constructed of sun-dried bricks, it is an extremely difficult matter to excavate them satisfactorily, for their walls, when first uncovered, look exactly like the *débris* which fills the chambers, and consequently the Arab workmen frequently cut away portions of them, In the future excavations it is to be hoped that better results will be attained by improved methods of working.

In many cases the old builders seem to have gone about their work in a very haphazard style. Frequently they did not dig foundations at all, as is indicated in the case of a retaining wall of the cemetery to the west of the Shatt en-Nil, where the difference of level of the lowest courses shows quite clearly that the bricks were laid immediately on the surface of the plain. And this, be it noted, was in the case of a fine wall constructed in specially well-made burned bricks, provided with drains, and extending for a length of over 500 ft.

The mound which covered the library

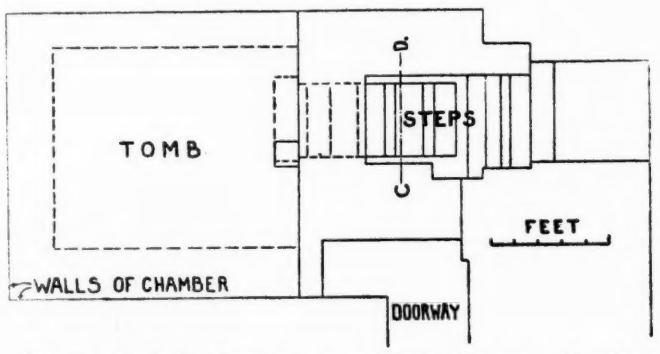


Fig. 3. Tomb Constructed in Burnt Brick beneath a Chamber on Outer Walls of Parthian Fortress.

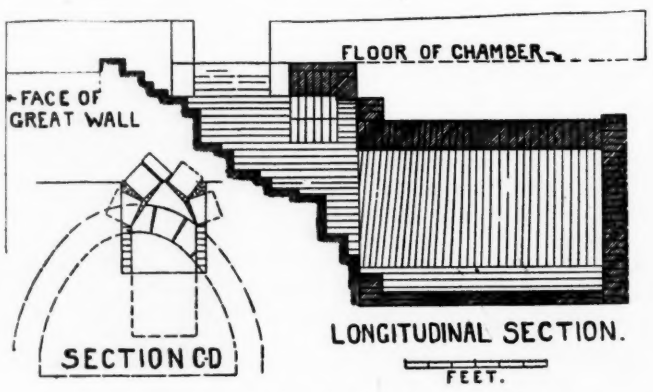


Fig. 4. Longitudinal and Cross Sections of Tomb.

buildings had been used as a burying ground, and in it tombs of all periods were discovered. One which should be mentioned was a corbelled structure similar to that discovered by Taylor at Mugheir, which has been so frequently illustrated. The Nippur example was about 20 ft. by 12 ft., and we found traces of a stairway leading to it, built with burnt brick, and exhibiting the same stepped recesses as were found in the city gateway. Other interesting

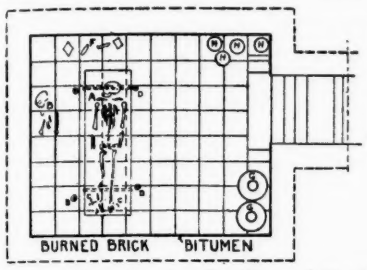


Fig. 5. *Plan showing Position of Burials at the time of Opening of the Tomb.*

A—Burial in Wooden Coffin.
B—Uncoffined (?) Burial.
C—Gold Ornaments.
D—Silver Coffin Handles.
E—Iron Bands.
F—Gold Head-bands.
G—Water Jars.
H—Food Platters.

tombs were the barrel-vaulted ones of the Parthian period, which were frequently plastered inside with fine white plaster. Some of them had pavements of brick sloping downwards to their small doors. A fine example of this class was found beneath the floor of a chamber on the outer walls of the great fortress which the Parthian invaders erected over the old temple. Figs. 3, 4, 5 illustrate this tomb, which lay beneath the second chamber, counting upwards, on the S.W. wall of the fortress. Fig. 3 is a block plan showing its position with regard to the wall-chamber, Fig. 4 gives two sections, and Fig. 5 shows the burials, etc.

BENEFIT SOCIETIES AND WORKMEN'S COMPENSATION.

THE comments passed upon the operation of the Workmen's Compensation Acts at the recent conference of Oddfellows held at Chester are deserving of attention at a time when the working of these Acts and their possible extension are under consideration. It must be remembered that the views there expressed were the views of working men in connexion with the Benefit or Friendly Societies managed by themselves or their representatives. They point out that the Workmen's Compensation Acts are causing a serious drain on the funds of these societies, and for two reasons—firstly, because men who formerly returned to work within a day or two after slight injury now remain at home until they are completely recovered, and the committees hesitate to compel them to work until complete recovery because of the influence such a course has on the compensation received by them under the Acts; secondly, because it tends to shorten the period during which men are considered to be able-bodied, and throws men out of employ at an earlier age or for slight infirmity.

The Oddfellows, in consequence, appeal for legislative assistance, because Parliament has passed legislation the tendency of which is to throw men out of employment. The Committee appointed by the Home Office, in their Report on the Workmen's Compensation Acts, have suggested remedies for the latter of the two grounds of complaint set out above, but in our opinion the first objection has never received sufficient attention, although it is of primary importance. The direct tendency of the Workmen's Compensation Acts is to prevent a man from getting well and to prevent his returning to work. If he is for a time totally disabled, it is his interest to remain so until he is so much recovered as to be able to earn his old wages; unless he can earn a sum considerably above his compensation, idleness and half wages are more seductive. The same reasoning applies to the partially disabled. The Friendly Societies, which are admittedly most excellently and economically administered by the men for the men, have always recognised this tendency of human nature, and therefore when a man comes upon the funds he is placed under surveillance and strict rule; he is not allowed to walk more than a certain distance from his home; he is not allowed out after a certain hour; in other words, the relief he receives is given under restrictions. No such drawbacks attend the receipt of compensation under the Acts; a pension of half-pay can be enjoyed with complete liberty. Now, since the rules of the Benefit Societies have been framed by the men in their own interests, it would appear highly reasonable that the Legislature should have taken a leaf out of their book, and we cannot but regret that this view was not dealt with by the Departmental Committee, and that they with their experience should not have suggested some scheme to bring some kind of similar restrictions to bear on persons in receipt of compensation. As it is, the Compensation Acts work in some respects disadvantageously with the Benefit Societies, since the Societies hesitate to stop relief as long as a man is in receipt of compensation; and the Benefit Societies work to the disadvantage of the Workmen's Compensation Act, since in many cases where compensation is being received the arbitrator tries to encourage a man to make some exertion by reducing compensation, but the reduced compensation *plus* the sick pay still enables a man who is inclined to malinger to continue in idleness.

BÔNE ALABASTER, MARBLE, AND ONYX.—Mr. De la Croix, British Vice-Consul at Bône, Algeria, writes that the district is renowned for alabaster of the same density as the alabaster of Valterra (Tuscany). The stone, of great transparency, takes a fine polish, and can compete with the finest alabaster of Italy and Scotland. An important marble and onyx quarry, situated at Ouled-Rahmoun, is being worked by a French company. The colours are golden onyx, clouded onyx, notched onyx, red onyx, African red, pink agate, and other varieties—black, yellow, etc. Many of these marbles are similar to those used in ancient monuments of Rome and Carthage.

WAR MEMORIAL, WARWICK.—A memorial tablet, which has been placed in the Collegiate College of St. Mary, Warwick, in memory of the men of the Warwickshire regiments who fell in the South African war, was unveiled on the 17th inst. The tablet is composed of white and black marble, and has been designed by Mr. Albert Toft, sculptor. The cost was 300*l*.

NOTES.

The Housing Problem.

IT is to be hoped that the correspondence which is now going on in the *Spectator* may do something to quicken public interest and knowledge in regard to the housing problem in rural districts. It is evident from this correspondence that landowners who are anxious to build cheap but yet good cottages are greatly hampered by the by-laws of local authorities. In one instance a landowner was not allowed by the local authority to build some model cottages of wood, because the authority considered that it would be unfair to those who had built cottages of more costly material. The main thing is that cottages at once sanitary and roomy, irrespective of material, should be erected in rural districts where they are required. The fact that wooden cottages cannot last so long as stone or brick is, in some respects, a positive advantage, for then, as times change and internal improvements become understood, new buildings can be erected. It is often a disadvantage to the rural poor that old brick cottages exist, because they cannot, either as regards sanitation or comfort, be brought up to a modern standard. The whole subject of rural housing requires investigation by a Royal Commission, on which experts should be placed. Local authorities who have got it into their heads that cottages should necessarily be of a particular material will require something like Governmental pressure to admit a larger variety of material into their district. The inelasticity of rural by-laws also requires impartial consideration. No subject is of greater importance than that of the housing of the working-classes in our rural districts, and it cannot be too soon taken in hand by the Government.

Trade Disputes.

REFERRING to the statement we made last week of the satisfactory relations which exist between capital and labour since the decision of the House of Lords in the Taff Vale Railway case, we may quote from the latest memorandum issued by the Labour Department of the Board of Trade for August. This Report, although it shows that the labour market was on the whole dull, with a decrease in wages affecting some 355,000 workpeople — a condition of affairs usually conducive to trade disputes—discloses the fact that the total number of workpeople involved in such disputes was only 12,969 as compared with 29,523 in August of last year. The changes in the rate of wages were arranged by conciliation boards as regards 246,000 workpeople, and as regards 109,300 workpeople by direct arrangement between the employers and employed; and out of the latter figure of 109,300 the disputes were arranged without a stoppage of work, except in seven cases, affecting only 4,000 persons. These figures are a tribute both to employers and employed, and also show that, in the absence of the paid agitator, the relations between capital and labour are capable of pacific adjustment in the interests of both.

Ben Nevis Observatory.

QUITE apart from its value as a conversational topic, the science of meteorology is of national importance, and universal regret must be felt at the announcement made that the observatory on Ben Nevis will be finally closed next month owing to lack of the necessary funds. The unique position of this establishment, at the highest point in the United Kingdom, lends a special interest and gives a peculiar value to the records there obtained. After Greenwich, the observatory is the most important in the whole country, and one that certainly ought to be maintained at the public cost. Unfortunately, the richest Government in the whole world appears unwilling to provide the small annual sum necessary to save the observatory from extinction. The Treasury has been asked for a grant of 600*l*. to defray that part of the annual expenditure of 1,000*l*. which has hitherto been met by subscriptions, but will not contribute more than 350*l*. This is a sorry exhibition of cheese-paring policy. Undoubtedly there are many calls upon the public purse, but it will be nothing less than a national disgrace if the parsimonious methods of Treasury officials are allowed to prevail in the present instance. At this season of the year it is difficult to bring pressure to bear upon the responsible Ministers of the Crown, and permanent officials cannot be expected to act on their own initiative. Hence the chief hope for the continuance of the observatory seems to rest upon the prospect of private support, and as the amount lacking is only 250*l*. per annum, there should be no difficulty in securing the requisite funds if the directors would reconsider their decision not to make any further appeal to the public. Time now presses, and if anything is to be done prompt action is absolutely essential.

The Dee Embankment.

FOR some years past the officials of the London and North-Western Railway Company have been aware of the perilous condition of the embankment which protects their main line between Holywell and Mostyn, in Flintshire. Owing to the action of sandbanks, the tide in the estuary of the Dee now sweeps portions of the embankment, and a considerable breach in the outer defences has recently been made near Llanerchymor. Between the railway and the sea wall is a strip of land some 200 yds. wide, and as this lies below high-water level it is in imminent danger of inundation, a matter of importance to the owners, but still more important to the railway company. The circumstances leading up to the present critical position are worthy of note. It appears that the Dee Conservancy Board were unable to undertake the works necessary for the preservation of the sea wall owing to the limited extent of their financial resources, and that terms could not be arranged for joint action by the landowners and the railway company, each party apparently thinking the other should bear the greater share of the expenditure involved. Finally, the railway company found it absolutely necessary to take action, and resolved to build a new embankment close to the line, leaving the land to its fate. Thousands of tons of stone, clay and earth have been transported to the site for the construction of a sloping bank from the permanent way to an adjacent ditch. The work is now well in hand, but, in consequence of the recent breach in the embankment, the position is distinctly critical. It is much to be regretted that the money being spent by the railway company could not be applied to the construction of new works on the river front, thus saving both the land and the railway line. We fear that each side has been playing a game of bluff, with the result that a large slice of the country will be lost.

The Amenities of the Thames.

THE Board of Trade have refused to grant their sanction to the projected construction by a trading company of what would be practically a dockyard on Lot's Eyot, a short distance above Kew Bridge, and opposite Kew Gardens. At present the island forms one of a group which partially conceals from view, from the south shore, the unsightly wharves and buildings along the river-side at Brentford. The frustrated scheme had been propounded by the Thames Steam Tug and Lighterage Company, who wanted to take Lot's Eyot for their barge building and repairing works. A petition has been addressed to the Thames Conservancy by the residents of Hampton Wick against the threatened disfigurement of the river-side by the construction of a wharf in a portion of the grounds of Cambridge House. The grounds lie opposite Canbury Gardens, which were laid out at a considerable cost by the Corporation of Kingston, to whom, together with the Hampton District Council, the ratepayers appeal for the preservation of the natural beauties of that reach of the Thames. Steps are being taken to enlist the co-operation of the East and West Ham districts in furthering a movement set on foot by the Stepney Borough Council to secure some sites which still remain vacant, and so to preserve them as open spaces on the left bank of the lower reaches of the river. The Borough Council seek to arrest the gradual closing-in of the Thames in the East-end of London, and, whilst opportunities yet offer, to provide means of public approach at various places on the bank, with open spaces for resort along the shore.

The Great Antwerp Fire.

THE extent of this fire has only become apparent after further detailed particulars have come to hand, and the area has been appreciated. Practically ten acres were at one time or other covered by burning petroleum, and two large petroleum stores are entirely wrecked. As to the originating cause of the fire, nothing has yet transpired; but as far as the spread of the fire is concerned, it is obvious that, although a considerable number of safeguards were practised and even required, the negligent manner in which these safeguards were applied led to disastrous results. Thus, the surrounding walls of one of the petroleum stores were too weak and had bad foundations. In the walls of another store openings were left through which the petroleum percolated. Some three years ago we dealt with another great fire at Antwerp at the Royal Storehouses, and there, too, the extent of the calamity, that is to say, the spread of the fire, was mainly due to neglect of precautionary measures. We hear that the warehouse district, with the exception of these Royal Storehouses, which have now been rebuilt, is very much behind the times as far as fire protection is concerned; and, taking the history of Antwerp fires of recent years, combined with the state of affairs that still reigns, we should not be surprised if this town were some day to be the scene of a far greater calamity. It is perhaps one of the worst features of Antwerp building that some of the new structures are among the most dangerous.

Hotel Darlington Collapse, New York.

DISCUSSION on the paper read in April last by Mr. Parsons before the American Society of Civil Engineers has brought forward a number of useful expressions of opinion by various well-known American engineers. It may be remembered that the Hotel Darlington was a twelve-story building constructed on the "cage" system, in which all the weight is carried by the columns, these being of cast iron. Although cast iron is by no means to be recommended for the columns of a high building, the failure does not in itself prove anything against the material. Imperfect design and poor workmanship were responsible for the disaster. The columns were not designed with due regard to eccentric loading, bracing for wind strains and for strains due to the use of hoisting machinery was absent, the metal in the flanges of the columns was honeycombed, and the bolting was both loose and inadequate. The New York Building Code is in most respects good, but it is a somewhat difficult matter to draft laws so as to cover every contingency, and the Darlington mishap has demonstrated the existence of several weak points in the code. The chief lesson it teaches is the folly of permitting buildings to be erected without intelligent supervision, and the great weakness of the New York code is that it provides no means of compelling the employment of competent professional aid. Perhaps the best criticism of the code is that it "pretends too much engineering," and has led unqualified persons into the practice of "designing according to law." By making provisions of a general character with strict safeguards none but properly qualified men will be able to undertake important works upon which the safety of the community rests. The position in New York can scarcely be considered satisfactory at the present time, especially in view of the remark made by a prominent American engineer that "many buildings in this city are in danger of collapse at any moment." On the whole, we prefer what are sometimes called "obsolete British methods."

Wireless Telegraphy.

THE theory of wireless telegraphy has been considerably advanced by the paper on Hertzian Waves, by Professor Love, of Oxford, which has just been published in the *Proceedings of the Royal Society*. Hertz, who was the first to detect the electro-magnetic waves in the

ether, which Maxwell had predicted, also worked out Maxwell's equations and drew pictures showing the propagation of the waves. Professor Love redraws some of these diagrams, and shows that they have to be modified very considerably. One of his results is that Hertzian waves can only exist when there is a magnetic and electrostatic field across which they can travel. For example, when waves are transmitted across the Atlantic, Faraday's lines of electric and magnetic force must previously exist between the receiver and the transmitter. When oscillations are set up at the spark gap of the transmitter electrostatic lines of force are broken off, forming closed loops, which push aside the existing lines of force as they expand outwards with the velocity of light. Professor Love has drawn very clear diagrams of this wave disturbance in the ether, showing how the loops come into existence and the shapes they assume as they expand. The arithmetical calculations involved in drawing the curves must have been very tedious, but the result is worthy of the labour, for, to practical electricians as well as scientists, Professor Love's results are of the greatest value, and a study of them will show the wireless electrician why it is necessary in some cases to earth the antennæ of the receiver and the transmitter, and why in other cases this is unnecessary. It is interesting to note that all Professor Love's results are deduced from Maxwell's mathematical equations.

The Preservation of Timber.

SOME notes on the preservation of timber, presented by Mr. J. R. Baterden, at a meeting of the Newcastle-on-Tyne Association of Students of the Institution of Civil Engineers, are of interest to our readers, although primarily relating to timber used in engineering works. It is now well known that most kinds of wood, if well seasoned and properly protected, will last for centuries. For instance, household furniture and timber buried in the ground last almost indefinitely, and engineering structures, such as timber quays in water free from marine worms, will remain in good condition for fifty years or more. The author points out that decay is most likely to commence in those portions of timber structures which are affected by variations of weather and temperature —sometimes dry, sometimes wet—and in places where there is no current of air. In decking, where dirt lies along the joints and keeps the timber moist, a life of more than ten years can scarcely be expected. This is accounted for by the fact that moisture encourages fermentation of the sap, a process that is stimulated by warmth. Hence the exclusion of humidity should be the first care of all who use timber, and the second is to adopt means for preventing the process of fermentation. Although devoting a good deal of attention to creosoted timber, Mr. Baterden makes some interesting notes on other forms of specially treated wood, referring in detail to the "Haskinizing" process. This system of treatment has the advantage that it does not involve the extraction of the sap, but is based upon the solidification of the natural constituents of the material, while destroying the germinative principle inherent in the sap, and sterilising all forms of organic life.

Cement Construction in Canada.

A NOTICEABLE feature in connexion with building operations in Canada is the extensive use made of cement and concrete. In Toronto it is now the usual practice to construct the entire foundations of private residences of concrete, and the same material is largely employed in building vaults, bridges, and other structures. In the Exhibition Park, Toronto, several buildings have been erected of hollow concrete blocks, which lend themselves to suitable architectural treatment and ensure solidity of construction. Concrete has also been employed in building many large grain elevators, and for the formation of footwalks in cities, towns, villages and hamlets throughout the country. For water reservoirs and cisterns, sewers, and even coffins and burial vaults, concrete is largely used by the Canadians; but concrete-steel construction appears to have made little headway in the country up to the present time. Considering the rapidly extending adoption of the new material in the United States, this backwardness on the adjoining country is somewhat surprising.

Barnet Hospital Competition.

AS WILL be seen under the head of "Competitions," the Barnet Isolation Hospital Committee, to whose proceedings reference has been made more than once in our columns, have made their awards in this competition, having persisted in their refusal to appoint a professional assessor. The long discussion on the subject, as reported in the *Barnet Times*, shows how much they needed professional advice, both to assist their very confused ideas as to what was to be the next step, and also to instil into them some notion of their duties towards competing architects, as may be gathered from the remarks of the Chairman, to the effect that if the Local Government Board and the County Council did not pass the plans, their duty would be to take up some other plan or set of plans; "but they were not bound to either Nos. 46 or 28" (the plans placed second and third) "or any other number in the list of over 50 sent in. They would be left with a perfectly free hand, and could select any which were sent of the 50 odd, or choose from any other source outside the competition." That is to say, the "over fifty" architects who had competed would be thrown over *en masse*, and their whole labour and chances wasted. If that is the Committee's idea of the way to treat competitors, no wonder they did not want to be bridled by an assessor, who would not have left them this kind of "perfectly free hand."

Benwell Public Library Competition.

TWO OR three weeks ago we commented on the unsatisfactory nature of this competition, in which pretty large premiums were offered, but with merely the bald statement that "the successful plans would become the property of the council," nothing being said of an assessor; and we indicated that it was probably a competition to be avoided. Our suspicions seem to have been more than justified. From a cutting that has been sent to us from a local paper, it appears that one of the members of the council has openly expressed himself as to the object of the advertisement:—

"Our plan is to get a good set of plans, and after assuring ourselves that they were all in order and the measurements correct, we could engage a clever clerk of works, who would see the work carried through according to these plans. Thus we would save all the architect's fees, which is a heavy item, and the work would be as well done as though we had an architect supervising."

That is not unfrequently the real object in advertising a competition, but we never saw it expressed with such cynical frankness before. The council may depend upon it that not a single architect of position or merit will respond to such an invitation.

Houses of Historical Interest: London.

IN furtherance of the movement for distinguishing the homes of eminent men and women, the Duke of Bedford has caused tablets of bronze, with suitable inscriptions, to be affixed upon the fronts of No. 65, Russell-square, and No. 11, Bedford-square — occupied respectively by Sir Thomas Lawrence, P.R.A., during the twenty-five years that preceded his death in 1830, and Henry Cavendish, investigator of chemical and natural science, and the first to calculate the mean density of the earth. A memorial tablet has recently been set up at No. 14, York-place, Baker-street, where Pitt resided in the interval 1803-4, during the Premiership of Addington, and which he quitted to resume the seals of office for the last time. A similar record will be made in respect of No. 6, Frith-street, Soho, where William Hazlitt died, Charles Lamb being in the room, on September 18, 1830; of No. 48, Welbeck-street, Marylebone, the home of Thomas Young, M.D., who rivalled Champollion in his elucidations of the ancient language and hieroglyphics of the Egyptians, discovered the interference of light, and expounded, in 1804, the theory of capillary attraction; and of No. 34, Gloucester-square, Bayswater, where lived George Stephenson.

The Photographic Salon.

THE twelfth Annual Exhibition of the Photographic Salon, at the Dudley Gallery, if it no more convinces us than its predecessors that photography is an "art" in the same sense as painting, serves to show what a number of different kinds of effects can be obtained by the judicious photographer. "Winter's Mantle" by Mr. Gleason (11), and "Road to the Old Farm," by Mr. Mitchell Elliott (12), show what delicate snow effects photography can give; while Mr. Steichen, in "The Big Cloud" (116), produces a most powerful effect with the representation of a large cumulous cloud over the horizon of a nearly black moor-land; but a painter would have got the same effect without losing so much of the detail of the foreground and middle distance. The same photographer exhibits a life-size head of G. F. Watts, with the Rembrandt-ish effect of strong light and shadow of which Mrs. Cameron set the first example in photographic portraiture. Mr. G. Davison's "Early Morning at Acle" (69), is most happily arranged in regard to pictorial composition; and Mr. H. Wild, in his

little afternoon scene on a sea-beach, "November" (207) has produced a poetic effect of declining day. We have so often spoken of the neglect of architecture in photographic exhibitions, that we must specially notice and approve the five small but well-selected and clearly executed small photographs of architectural subjects by Mr. Frederick H. Evans. This is a class of subject to which photography is particularly well adapted, and in which it is most valuable; and we hope to see more of Mr. Evans's work of this kind. There are two or three attempts at using photography for nude studies, removing them from realism either by a special tint in imitation of crayon, as in Mr. Le Bègue's "Sanguine," or by throwing them partly into shadow, as in "The Toilette of Gabrielle," by Messrs. Haweis and Coles; but considerations of decorum must always stand in the way of any extensive use of photography in this class of subject, except in the matter of life studies for the use of painters, which of course are not things for exhibition. That is another point in the superiority of painting over photography; a painter treats the nude figure conventionally; photography only treats it realistically.

Turntable Houses.

IT appears that two Frenchmen, Dr. Pellegrin and M. E. Petit (an architect), have proposed a system of building houses on turning platforms, so that questions of aspect and prospect can be settled at the will of the owner. The platform is to be moved by the agency of a gas or oil engine. It is a scheme which obviously could only be applied to houses of small size, and must have many drawbacks even in that case; and belongs in fact to the type of human operations which may be irreverently classified as "fads."

NOTES AND SKETCHES IN SOUTHERN ITALY.—III.

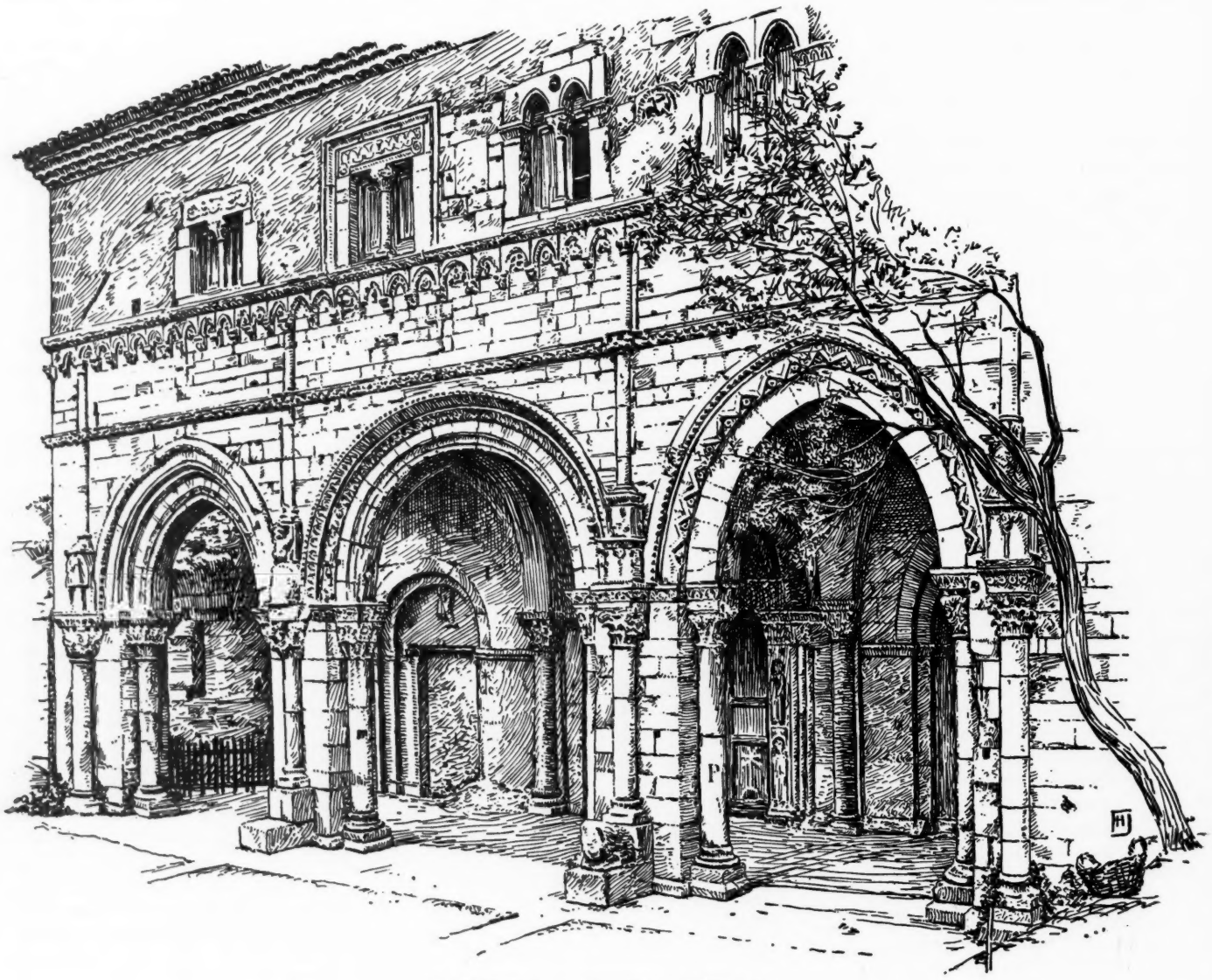
SAN CLEMENTE IN CASAURIA.

THE church of S. Clemente in Casauria is practically all that now remains of an abbey which was at one time celebrated and rich. It stands at a distance of a few kilometres from the little village of Torre de' Passeri, which takes its name from a tower from the summit of which a light was displayed to guide travellers in crossing the river Pescara, the ancient Aternus, which is near (Torre dei passi, Turris passuum). At one time the river divided into several arms and thus made the land upon which the abbey was founded an island, and that there are and were times when the fording of the river was dangerous is proved by the present condition of the pretty winding ravine down which the river runs. There was a lofty bridge by which the road crossed the river at a considerable height. This was broken down by the stream some time ago, long enough for the sloping roadway which led down to it to have been cultivated as a garden, and great masses of wall as large as the side of an ordinary house lie in the stream, testifying to its power when raging in flood. A slab which lies in front of the church bears part of an inscription recording the repair of a bridge near here in Roman times, and fragments which appear to have belonged to it are scattered here and there, which proves that the river had a bad reputation long before it drowned Sforza Attendolo at the ford nearest the sea. The Roman settlement was called Interpromium, and in the atrium in front of the great west door is a decayed inscription which records how certain citizens of Sulmona had reconstructed the "ponderarium" of the village or district of Interpromium which had been cast down by an earthquake. In the time of Lupoli, 1786, the inscription was more easily legible, and he gives it as follows:—

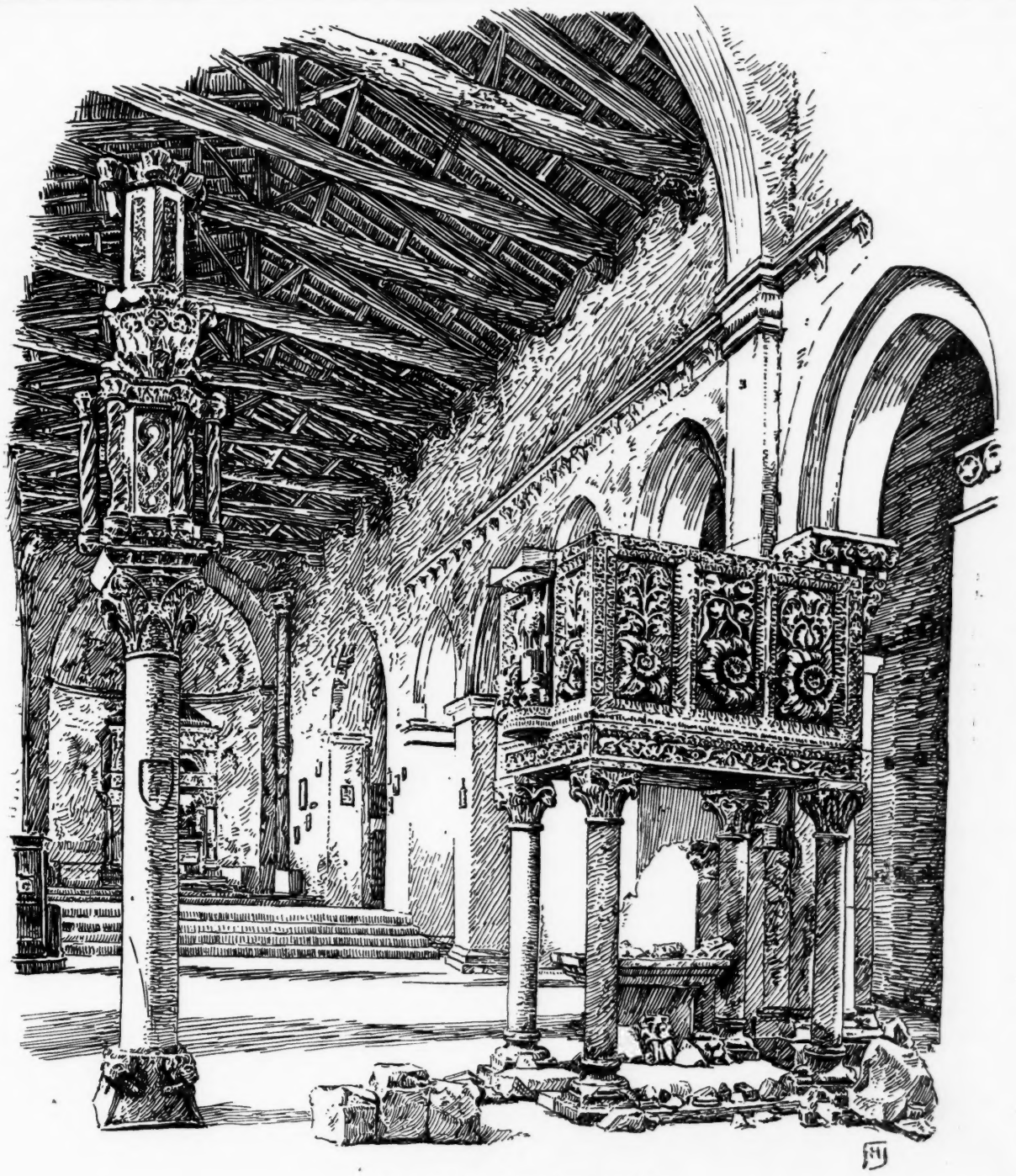
cives Sulmonii. Primus. et. Fortunatus
hoc Ponderarium. Pagi. Interpromini
vi Terremotus. Dilapsum. a. solo
Sua. pecunia. restituerunt.

To the left of the atrium or porch is a room which was once vaulted, but is now open to the sky and filled with antique fragments, between which a rank growth of weeds has sprung up. Here are fragmentary inscriptions, steles, altars, and various portions of architectural ornaments. Walls were built at some time across the room dividing the space, and these are mainly formed of architectural fragments. In one of them bits of a mosaic pavement may be seen, and many portions of inscriptions—sometimes a few disjointed letters, sometimes whole words. Here are also stored a good many pieces of Romanesque and mediæval carving—caps, portions of a small rose window, etc.

The church had a Benedictine monastery attached to it which was founded by the Emperor Lewis II. in 871 in thanksgiving for the driving of the Saracens out of Italy, "on the island called Casauria," so that the name preceded the monastery and had nothing to do with its riches or splendour. In 872 he obtained the bones of S. Clement, who was thought likely to be able to save those who fell into the Pescara and were drowning, since he had been drowned for his belief in Christ, and deposited them in the church which was then dedicated to the Holy Trinity. They were brought from Rome, attested by various miraculous occurrences, and placed before the high altar on May 27. A certain Auderado ceded much of his property to the monks for the building of the monastery, and in 874 it is referred to by Count Eribald as



S. Clemente in Casauria: West End.



S. Clemente in Casauria: Interior.

built. The Emperor largely endowed the monastery and gave the abbots the right to use the imperial sceptre instead of pastoral staff, holding it in the right hand, which Ughelli notes as a unique concession. The first abbot was named Romano, priest and monk of the church and monastery of S. Mauro on the hill of Amiternus. Of this IXth century church nothing remains but the crypt. The twelve columns which support the vaults are antique, some of them fluted and very dwarf. The caps of the four which support the apse vault are Corinthian. A piece of the original pavement has been found, and shows that the crypt was never any loftier. In the apse is a rough stone altar on a pedestal, round the walls remains of a tufa bench, and on the plastered vault rough scrolls of dark green with spots of a brown yellow looking like twirling serpents. It has nine small naves vaulted with quadripartite vaulting, and is approached by two narrow stairs. In 920 the monastery was sacked by the Saracens. The monks approached Berengarius, who gave them the power to elect an abbot, but the rebuilding took fifty years, and appears to have exhausted their resources, for in 1025 Abbot Guido found the place in a deplorable state. He obtained many privileges and grants from the Emperors Conrad and Hugo, and, dying in 1045, left the monastery much richer. Five years later Abbot Domenico for the first time asked the Roman pontiff for a "privilegium" against bishops, archbishops, counts, barons, and all those who wished to have power in the monastery. Leo IX. was then returning from his unfortunate expedition against the Normans, and subsequent history shows that the "privilegium" was of very little avail against them. In 1074 Abbot Trasmondo fortified the "Castello" outside, also renewed the church of S. Pelino, and commenced to restore that of S. Panfilo in Sulmona. "Not content with the humility of the former church built by the Emperor Lewis, he built a new church in the place which is still called 'ad sanctos novos,' to which he obliged the congregations to move, wishing, if he had time and God willed it, to transfer the blessed Clement there." Between 1076 and 1079 the Norman Count Malmazetto put Trasmondo in prison and sacked the church and monastery, and when he came out he retired to his bishopric of S. Pelino, where he died and was buried, the monastery remaining waste. Malmazetto at last was imprisoned by the Lord of Prezza, and died in 1097. He was buried in the crypt. Abbot Grimoald obtained from Urban II. the pastoral staff in lieu of the imperial sceptre. He commenced the restoration of the buildings. Under Paschal II., successor to Urban, in 1104, a cardinal named Agostino had the tomb opened to see whether the monastery really possessed the body of S. Clement, and a body was found with a descriptive inscription in letters of gold. Grimoald made the altar, and the body was put into it, and it was sealed with lead and with iron, being dedicated in 1105. A small piece of the body was retained and placed in a reliquary. The great authority for the history of the abbey is the "Chronicon Casauriense" now in the Bibliothéque Nationale in Paris, which was composed by the monk Berardus and written by a Magister Rusticus at the end of the XIIth century. The glory of the monastery culminated under Abbot Leonato, who was elected in 1155 and built the atrium in 1176. After his death and that of his successor, Abbot Joel, to whom the fine bronze doors are due, it began to decay.

The high altar stands under a baldacchino of stucco on four columns, which appear to be early XIVth century, raised on two steps. It is a Christian sarcophagus of the IVth or early Vth century, and through a hole the IIIrd century tomb of Greek marble, carved with floral ornament, can be seen, which is no doubt the one placed in the altar in 1104. On the top step is an inscription in Roman letters of the XVth century, probably a copy of the earlier inscription. It runs:—

Hic requiescit
Sanctus Clemens S. Petri Discipulus
Et a B. Petro secundus
qui jussu Trajani Imperatoris
Ancora ad ejus collum ligata
fuit in pelago demersus.

The sarcophagus was partially cleared of the cement which overlaid it by Sig. Calore, who has charge of the building, and under whose careful eye investigations and excavations are proceeding. It has three subjects in front with wavy flutings between. The central subject shows an "orante" sustained by two angels. The base of the Easter candlestick

is probably early, a detached inscription gives a date, 1202, and name, Magister Berardus, "oc opus fieri fecit." The church was damaged by earthquake in 1348, and the present candlestick was put upon the old base when other restorations were effected. It consists of a column of the stone of Pesco Sansonesco, with an elegant cap of Gothic foliage, which bears upon its abacus (which is decorated with a band of mosaic) an hexagonal prism crowned by six spiral colonnettes. On the prism are Cosmati inlays. Above the colonnettes is another cap and another imperfect prism above. At S. Maria d'Ara Bona there is a somewhat similar candlestick. There is a long inscription on the base of the upper part of the ambo, which is strange in design, showing great vigour of projection in the details. At the end of the inscription the name of the sculptor occurs, "Frater ego Jacopus tibi martir supplico Clemens. Istud opus recipe atque mihi sis Clemens. A. Pop +." Probably he was of Popoli. He may also have worked on the façade. The ambo at S. Pelino is probably also his, being much like this. The church is a Latin cross in plan, nearly 150 ft. long, and about 63 ft. broad in the transepts and 50 ft. in the nave. There are eight pointed arches with piers, the piers level with the large arch. The nave is of the full height only above these, and is built of a fine local stone called "pietra gentile," from Valle S. Maria, near Pesco Sansonesco. On the outside this higher part has three round-arched splayed windows on each side; a string runs round them at a little distance and unites them horizontally. Colonnettes rise from the springing of this arch, dividing the wall into equal spaces, and a crowning cornice of little arches and a dentilled string above is so arranged that three rest on corbels between each couple of columns. The arches are pointed, and a rosette is beneath each. The apse has the same kind of arcading, but with round arches, of which the colonnettes enclose two instead of three; in the centre are six corbels above a square-headed moulded window, with the usual Apulian beasts on corbels below it. The outside of the crypt shows a small pointed window flanked by two circular discs in high mouldings, and others in the flat wall. Abbot Leonato's wall is outside the ancient wall of the crypt, and has therefore closed the other original windows. The windows at the end of the aisles are round-headed, and have projecting hood moulds, with columns and caps. After the earthquake of 1348 they built a great arch and wall to close the high nave, and in the XVth century the present bell-tower was built to replace the ruined ancient sacristy and campanile.

The general design of the atrium is shown in the drawings. It appears probable that there was once an oratory over it, converted into cells at a later date. The square windows appear to be XIIth century. Probably the whole was altered after the XIVth century earthquake with old material. Only one of the lions which supported the columns remains, the other vanished during some badly-managed restorations before Sig. Calore came into power. On one of the caps may be seen the abbatial sceptre, and above it the symbols of the four Evangelists. Those of the central arch bear the figures of the twelve apostles; above, on the curve of the arch, are several figures with inscribed scrolls—Rex Salamon, Sanctus Clemens, an angel, and Rex David. A pointed arched cornice runs beneath the windows. The vaulting arches to the church and the arches above the doors are slightly horseshoe in shape. On the architrave of the central door is the history of the foundation of the church and monastery and the translation of the relics of S. Clement, and in the lunette S. Clement enthroned, with SS. Phœbus and Cornelius on the right and Abbot Leonato on the left holding a model of the church; rosettes and leaves like the ambo fill the corners. Above the left door is a relief of S. Michael, with the dragon on a square stone inserted; on the right is a Virgin and child, copied from a Byzantine original and inscribed $\overline{\text{MP}}$ $\overline{\Theta\text{Y}}$. On the jambs of the central door are figures beneath canopies, very French in style; and on the outside of the apse is a capital with vine leaves studied from nature. Sig. Calore believes that French workmen were employed and compares the church with S. Benoit-sur-Loire, and the XIIth century Provençal churches.

The bronze doors are very interesting, though not so early as others of the same type elsewhere in South Italy. They were probably made for Abbot Joel in 1191. There are seventy-two square panels, with bands between and rosettes. The panels were inlaid in patterns with gold, which, of course, has vanished. The top row shows four figures of abbots, with rosettes in the corner panels outside them. Beneath these rosettes are a series of three-towered castles, with a list of the places over which the abbey had jurisdiction, which reaches to the bottom row. The other panels are filled with interlacing figures, rosettes, crosses in circles, a crescent moon with a star over it, and another with a cross, both in circles, etc. In the fourth row from the ground the ring handles occur, twisted and held in lions' mouths. Oriental influence appears strongly in details, both of ornament and subject, but one of the figures is inscribed Abbot Joel, and since Roger of Melfi made the doors of the tomb of Bohemond at Canosa, near the beginning of the century, which also show Oriental influence very strongly, there seems no reason for supposing that they are not the work of Italians.

F. H. J.

S. Clemente in Casauria: Interior of Atrium.

AN ULTRA-MODERN GERMAN VILLA.

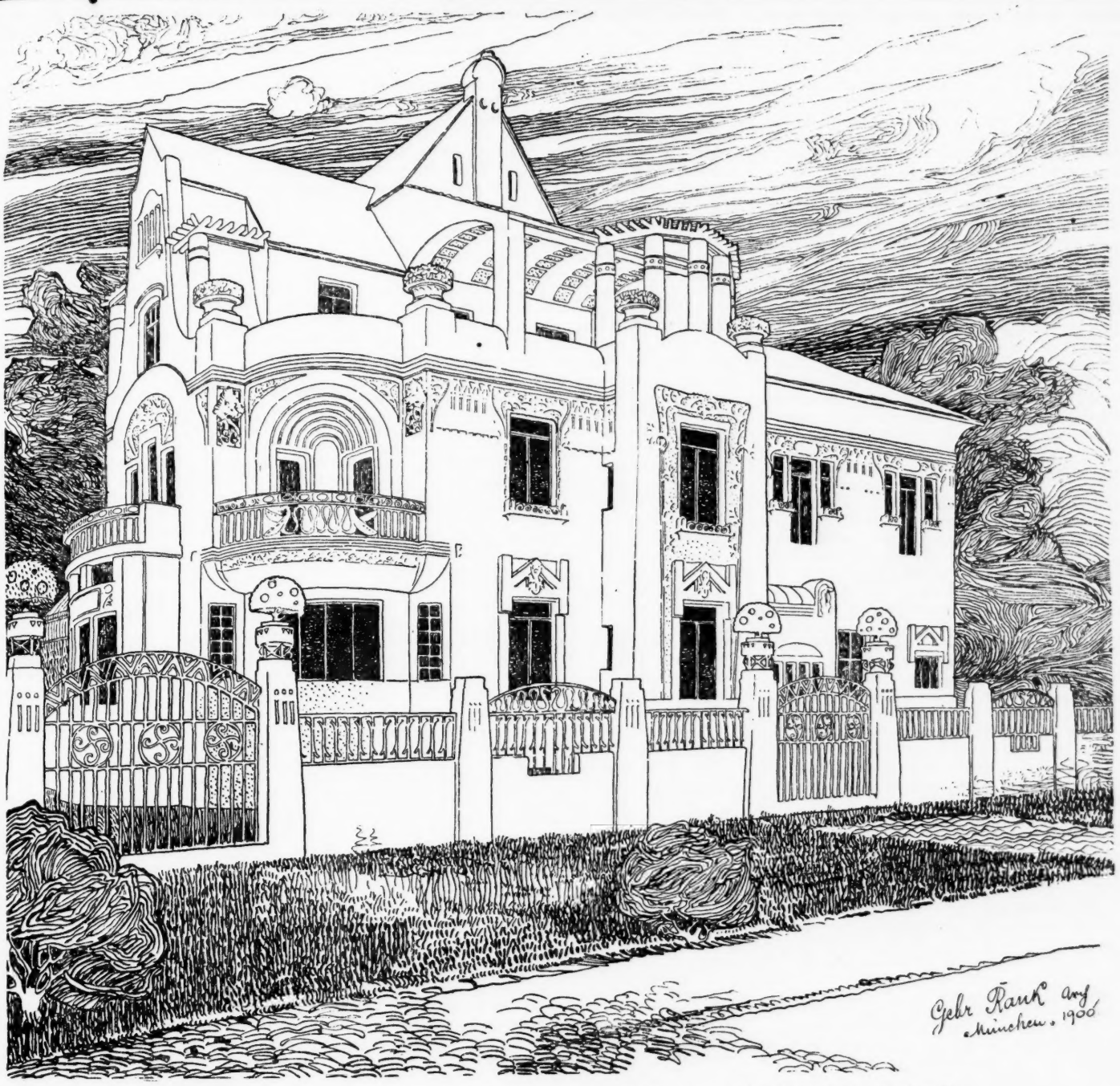
THIS illustration of a villa built at Thalkirchen, near Munich, from the designs of a Munich architect, Herr Rank, is reduced from a recent illustration in the *Architektonische Rundschau*. It is an example of the curious forms of development of modern German taste in domestic architecture. We give also the plan.

THE ARCHITECTURAL ASSOCIATION VISIT TO KETTERING DISTRICT.

THE sixth and last visit of the summer series of visits was made, for the week-end, to the interesting district around Kettering, from Friday, the 16th inst., to the following Monday morning, and was well attended, particularly by the photographers of the Association. Meeting at St. Pancras, the party left at 5.45 p.m. and found comfortable quarters awaiting them at the Royal Hotel, Kettering.

On Saturday morning, the 17th, in glorious sunshine, the party left for a long round, personally conducted by Mr. J. A. Gotch of Kettering, whose unequalled knowledge of the buildings of Northamptonshire, and whose valuable assistance in the preparation of the programme, were placed at the service of the members. Passing *en route* the interesting church of Barton Seagrave, with its Norman doorway and remains of the early church, we reached Islip. This charming Perpendicular church, dedicated to St. Nicholas, is remarkable for its good proportions and tall, elegant spire, and the peculiar plan of the piers of its nave arcades—a narrow strip of masonry placed axially north and south, and having engaged columns east and west of it to support the group of mouldings of the arches. This peculiarity we see repeated in several neighbouring churches, evidently a local type of masonry executed at this period. A mural tablet, on the south internal wall of the tower, to the memory of Dame Mary, wife of Sir J. Washington (*ob.* 1624), proved interesting. Other features worth notice were the octagonal font and the stoup inside the south door.

A short drive of two miles brought us to the village of Lowick, the church of St. Peter receiving our attention, chiefly for its Perpendicular lantern tower, at the west-end of the church, and its old glass, with the monuments of the XVth century. The octagonal lantern, with its group of twelve pinnacles, each crowned with a weather vane, is carried on the thick walls of the square tower, small squinches serving to carry the canted sides. The sedilia, both of the chancel and the chapel north of the chancel, were good specimens of the style. But the interest here centred more particularly on the fine tombs (1) of Ralph Greene, 1415, with its alabaster effigies of himself and his wife Katherine, and (2) of Edward Stafford, Earl of Wiltshire, 1499, in the south chapel (of Our Lady). The former lies between the chancel and chancel aisle, and the figure of the Lord of Drayton is in armour, grasping the hand of his wife, the head-dress of the female figure being the rich but exaggerated mode of dressing the coiffure which obtained at that period. The beautiful work in the canopied heads of this tomb, with the band of angel figures in niches surrounding the tomb below, forms a delightful specimen of early XVth century carving. Fortunately the indenture entered into between the employer and her masons is still in existence, and relates how the widow, Katherine, retained two "kervers"—to wit, Thos. Prentys and Robt. Sutton—to execute, before the feast of "Pasques," anno 1420, "bein honestement et profitablement," this

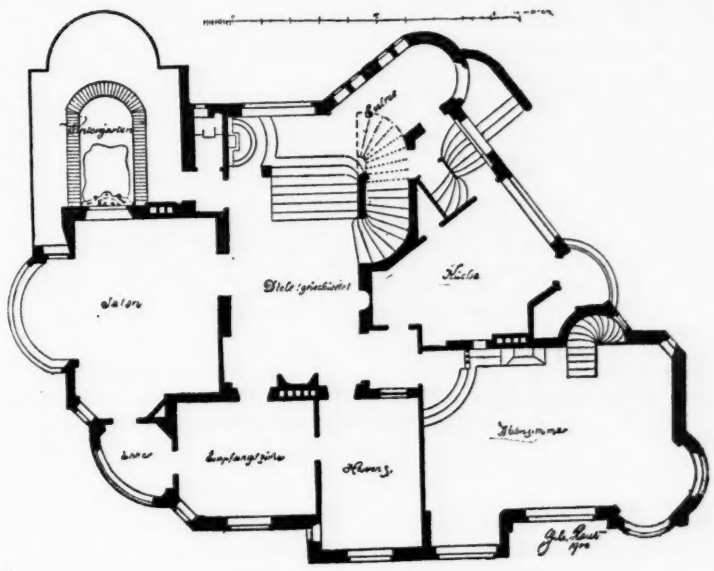


Villa, Thalkirchen, near Munich. Herr Rank, Architect. (*From the "Architektonische Rundschau."*)

sumptuous tomb of alabaster, and find the material, for the sum of 40*l.* sterling.

The other tomb, of the Earl of Wiltshire, who died in the closing year of the XVth century, is also a very beautiful and rich piece of work. The marginal inscription, with its leaf scrolls dividing the words, is a remarkable piece of lettering, worthy of the most careful record. The soles of the feet of the effigy are supported by two small and quaintly-carved figures of kneeling monks. A third tomb, a flat slab with brasses let into it, is that of Henry Greene, of a date intermediate between those above mentioned, 1467, and shows us the figure clothed in a tabard. The north aisle has some very fine and rich stained glass in the upper half of each window (the lower being plain), and dating perhaps a century earlier than the windows in which they are inserted.

The inexorable summons from the whipper-in of the party bore us away from this most interesting structure, to repair for refreshment to the hostelry of the White Horse, and immediately after to proceed to Drayton Manor, lying in the park quite near (the seat of Mrs. Stopford Sackville), where the party was hospitably received, and after a conducted survey of the premises, left to wander at will. It was here we had the benefit of Mr. Gotch's antiquarian research, and a plan he had prepared, chronologically coloured, served to elucidate the history of the house. Once a manor, seized from the Saxon owner by the greedy conqueror, it passed to the De Veres in the time of Henry II., the first Earl of Oxford (Aubrey) being, we know, its owner; and it remained with the De Veres till one Sir Walter took to himself the name of Drayton, in the reign of Richard I. His descendant, Sir Simon de Drayton, received, 1328, a licence to crenellate, and proceeded to erect the house with enclosed forecourt, that we now see, much altered indeed, but easily traceable. Walpole wrote to his friend Montague in 1763:—"The front is a brave, strong castle wall, embattled and loopholed for defence, . . . the mansion all towers and turrets, . . . not a rag in it under forty, fifty, or a thousand years old." The great hall, the solar adjoining, and the front buildings were Simon's work, and it was interesting to know that the old roof of the hall is still preserved intact, but invisible,



Villa, Thalkirchen. Plan.

because of the plaster ceiling inserted at a lower level.

Henry Greene, in 1450 (he was afterwards the Earl whose tomb we had seen at Lowick), altered, and indeed, rebuilt the greater part of the house, and no more was apparently done till in 1584 it was again enlarged by Lewis, third baron (1572-1601), and this Elizabethan work is perhaps the best portion of the house. John Thorp is said to have been entrusted with the execution of his scheme. This comprised the entire north-east wing, with its vaulted cellars, the two wings of the courtyard, and the front overlooking the pleasaunce. When Lady Mary Mordaunt married the Duke of Norfolk, much improvement was done, and we see the magnificent ironwork of *cir.* 1700, in gates, railings, and grilles, bearing her cypher. Tijon was then in his prime, and although no connexion with him can be traced, probably his craftsmen executed some of the work. Then it was that the interior of the hall was remodelled; the façade of the courtyard added, and the front portion improved. Lady Mary's second husband was Sir John Germain, who came over with William III., and has left us the magnificent gardens, with their terraces, ponds, balustrades and lead vases, as well as the colonnades of the forecourt. The present owner has done much to restore the beauties of the place, and everywhere is her loving care apparent. We left with much regret, time being short, and pushed on to Weekley Rise, for a pleasant rest in Mr. Gotch's delightful garden. After tea, the party proceeded by the fields to see the church of St. Mary, Weekley, and the almshouse, or Montague Hospital. The church is Decorated, containing an effigy tomb of Lord Chief Justice Montague, who died in 1556, the father of the Sir Edward who founded the almshouse, dated 1611, with its quaint motto:—"What thou doest do yt in fayth," and the hexameter from Ovid below the sundial, "Tempora labuntur tacitisque senescimus annis" ("Time flows, and we grow old thro' silent years"). The building has a fine doorway and gable over, still in remarkably good repair, but only two occupants remain. When they are gone the charity will presumably lapse.

Immediately adjoining the church and almshouse is the park gate of Boughton, whose ample avenues laid out by John the Planter, afforded a pleasant stroll before reaching the house, owned by the Duke of Buccleuch. It was the first Duke of Montagu, Ralph, who built the house, and incorporated parts of the previous Elizabethan structure, and the second, John (the Planter), who beautified the demesne, enlarged the work of his predecessor, and left us the wings of the large house, one of which is still unfinished. A lengthy perambulation through the state rooms brought to a close the first day's programme, and so back at dusk to our hotel.

Sunday broke even more fine and sunny than the day before, and an early start enabled us to get to Geddington before the hour of service. The village is picturesque, and boasts a good group in its bridge, cross, and church, all in close proximity. The cross is one of the Eleanor crosses, a XIIIth century relic, but differing from the others at Northampton and Waltham, and probably from those formerly at Charing, Cheap, Dunstable, Stony Stratford, and Lincoln. But the statues on the Geddington cross are clearly by the same hand as those at Northampton, perhaps by John de la Battaile, the records and accounts of the executors being still extant; but there is no trace of the Geddington one in these. Its peculiarity consists in being triangular in plan, standing on a hexagonal base; and the canopies sheltering the figures are carried on slender shafts in front of the figures, which results in partially concealing the sculpture, to its detriment. These crosses, originally nine in number, were all erected between 1291 and 1294.

Passing on to Stanion, we made a brief survey of the church, which has a well-proportioned spire and a good font, and is linked with a tradition of the surrounding Rockingham forest. Proceeding on our route, we passed the quarries whence is obtained the Weldon stone; their output appears limited, judging from superficial evidence, but it must not be forgotten that from time immemorial has this stone been worked, Kirby Hall and even old St. Paul's being built of it. So also are many Cambridge colleges, St. Dunstan's in Fleet-street, and others. But to the uninitiated let it be said that the Weldon and the Ketton stone are one and the same.

Passing slowly through Great Weldon, the better to observe its little lodge (illustrated in Mr. Gotch's book) and its many interesting houses, we drove along by Deene Park (Lady Cardigan's) to Kirby Hall, where the inexorable official allowed us three brief but busy hours. Its departed magnificence has been often described; its present neglected stateliness cannot be described here. It should be seen and pondered over. Perhaps the unfortunate selection of its site was its condemnation, but in spite of drawbacks, it remained habitable down to 1820.

The mansion, built by "Humfree Staffard," remains very much as he left it; John Thorpe's plan is still to be seen in the Soane Museum, and on it he records "I layd ye first stone, A° 1570." It was sold to Sir Christopher Hatton in 1575, the year Stafford died, but circumstances prevented him from viewing his purchase till 1580, and his successor, another Sir Christopher, employed Inigo Jones to add to and beautify the work of Thorpe. His additions were not of an extensive character, only insertions being made to the north and south sides of the quadrangle, a staircase (now destroyed), a gateway in the outer court, the side entrances, and a few other minor features. The terraces, gardens, bridge, even the church, are gone, without more than mere traces and the house itself is rapidly becoming a ruin; but a small amount of timely care will preserve its solitary grandeur for many years.

Our allotted time having run out, and being unable to visit Gretton, which was on our programme, we drove on to the picturesque and charmingly-situated village of Rockingham. The castle was not to be seen on a Sunday, but we obtained a peep of the massive embattled gateway, dating from 1275.

We diverged, on our homeward journey, to Rushton, but the shades of night had fallen ere we reached it; so on to Kettering.

The Association must be congratulated on the success of the visit; a week-end, once in the year, affords good opportunity of both study and social reunion, and when the members have the assistance of such ciceroni as Mr. Gotch, eminent but genial withal, such visits cannot fail of success, the weather always permitting.

Illustrations.

"SCIENCE AND ART": RELIEF.

THIS panel, which was exhibited at the last Royal Academy during the present year, is one of a series of five panels representing the Arts and Crafts, to be placed in the marble staircase leading to the ballroom in the "Grosvenor," Glasgow.

The architect of the building is Mr. Geo. Bell, of Glasgow. The sculptor is Mr. Albert H. Hodge, of London.

COUNTY HALL, NORTHALLERTON.

THIS building is in course of erection for the North Riding of Yorkshire County Council. The design was selected in a limited competition ten years ago, Mr. A. Waterhouse being the assessor. The original plans have been remodelled to meet more recent requirements, and have been designed with a view to future extension.

A feature has been made of the hall and grand staircase leading to the anteroom and council chamber, in which Hopton Wood stone is being largely used. The building is faced with red Leicestershire sand stock bricks and stone from the Hollington quarries, and the roofs are to be covered with thick light-green Westmorland slates.

The contractors are Messrs. J. Howe and Co., West Hartlepool, and the architect is Mr. Walter H. Brierley, of York.

The drawing was hung in this year's Academy.

PENN HOUSE, WESTON, NEAR BATH.

THE designs shown herewith are a scheme for remodelling a house built in the "Italian Villa" fashion about forty years ago.

The existing house stands on sloping ground, with its principal aspects to the south and west. The main entrance is on the east side, and on the north side are the stables, designed by the late Mr. J. M. Brydon.

The scheme of remodelling has been to some extent governed by the plan of the old building, part of which is to remain, and this has necessitated the position of the hall, which is intended to be top-lit. The walls are of Bath stone ashlar.

A start has been made with the billiard-room wing, and the work is being carried out by Messrs. Jacob Long and Sons, of Bath, from the designs and under the superintendence of Mr. Reginald Blomfield, of London.

The drawing was exhibited at the Royal Academy this year.

BLACKWOOD HOUSE, BYFLEET, SURREY.

THIS house is now being built in Dartnell Park, Byfleet. The walls are of brick, and are 14 in. thick above the plinth, and covered with cement rough-cast. The roof-tiles are made to imitate old. The framing of the verandah is of teak.

In the hall the panelling is of basswood, stained and oiled, and this and all the mantelpieces are being made by Mr. J. White, of the Pyghtle Works, Bedford. The floors of the billiard-room, kitchen, etc., are of wood blocks, laid by the Acme Woodblock Flooring Co.; Messrs. J. Garrett and Son, Balham, are the builders, and the architects are Messrs. Sutcliffe and Sutcliffe, London. The illustrations were sent to us under the name of Mr. G. L. Sutcliffe, which only was therefore attached to the plate.

THE BRITISH FIRE PREVENTION COMMITTEE'S VISIT TO BUDAPEST.

AS ALREADY chronicled, the British Fire Prevention Committee organised a small Commission to attend the Budapest Fire Congress, to which the Executive Officers had received an invitation, in return for the hospitality to the Hungarian visitors at the Fire Prevention Congress held in London in 1903. The delegation included officers of the National Fire Brigades' Union, representing the Council of that body, which had received a similar invitation. The Commission numbered ten and was away from England for seventeen days, and besides visiting Budapest made several important inspections on the return journey, namely at Vienna, Munich, Nuremburg, Frankfort, and Cologne.

Of the papers read at Budapest, there were two on the Baltimore fire, of which we have already published one by Mr. Ellis Marsland; there were two on Theatre Safety; one on Fire Alarms; one on Mill Protection; and one on the Chemistry of Fire Protection, which might be deemed to be of interest to the building world.

The following were the resolutions arising out of the discussion of these papers, which should be of interest to architects, and in presenting them we consider that particularly those relating to the Mills and Factories should have the careful attention of the Home Authorities.

RESOLUTIONS.

"*Mills and Factories.*—1. These should be provided with properly organised private fire brigades to meet the early stages of an emergency, and these brigades should be officially inspected at regular intervals.

"2. Any fire or alarm of fire in a mill or factory, however slight, should be immediately reported to the local authority, with the view of preventing similar occurrences; and failure to immediately make such a report should be heavily penalised.

"3. The preventive measures against the possible outbreak of fire in mills and factories should be increased by a more systematic development of the structural regulations defining watchmen's duties and responsibilities.

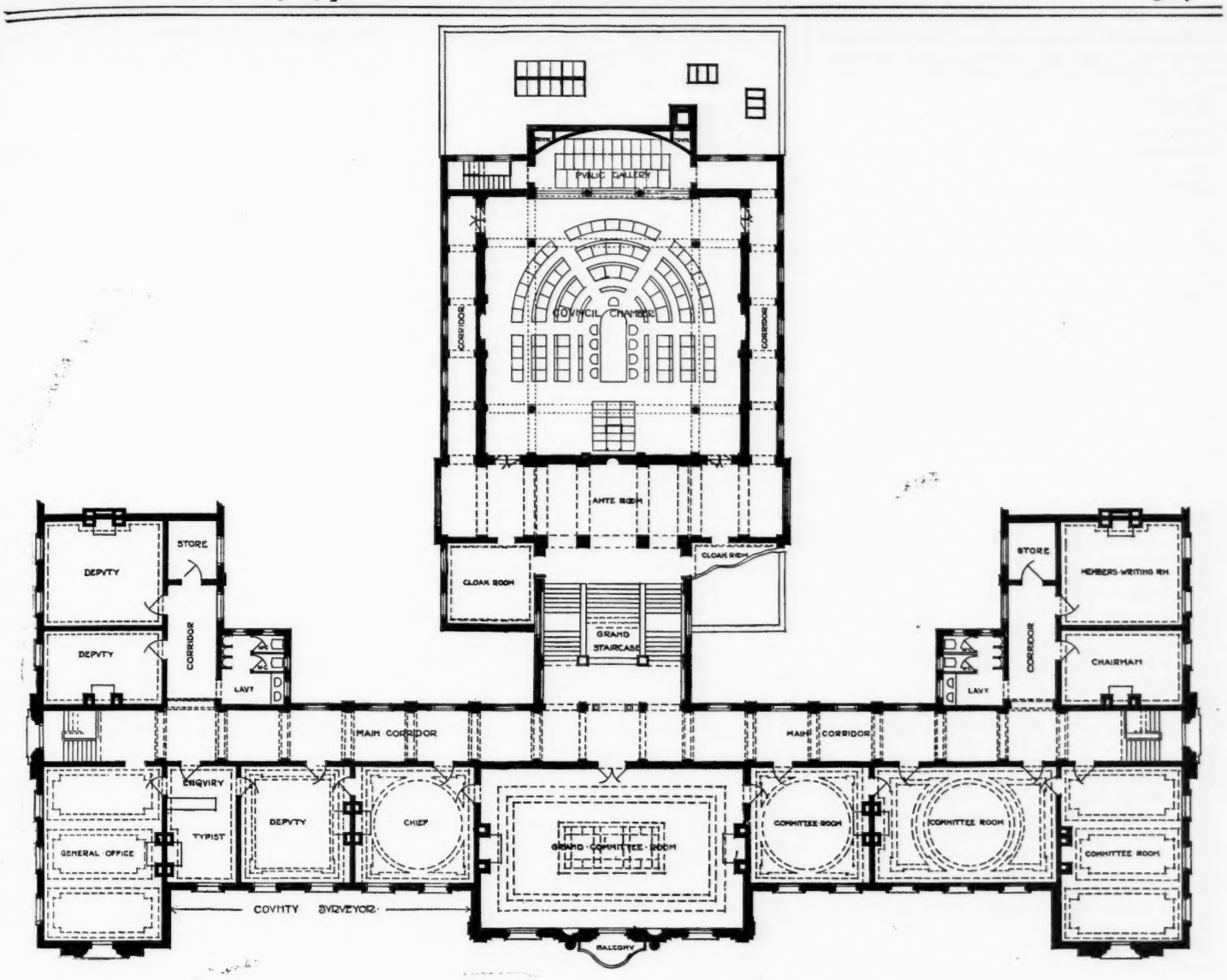
"*Theatres.*—It is absolutely essential that all stage scenery and properties be rendered non-inflammable in a reliable and permanent manner, and that all the constructional parts of a stage be of a fire-resisting character.

"*Chemistry of Fire Protection.*—The greatest attention should be given to the chemistry of fire protection, in the interests of fire prevention.

"*Fire Alarms.*—The public authorities should give greater attention to the installation of modern fire alarm systems in the minor urban and rural districts."

Of the above resolutions, those relating to the non-inflammability of scenery and the chemistry of Fire Protection in some degree overlapped; but we are glad to see that this question of chemistry for the purposes of Fire Prevention was given an important position at the Budapest gathering, for it has been too long neglected, with the result that much has not yet been done which might long ago have been accomplished.

The Conference was followed by a meeting



County Hall, Northallerton. (*See page* 316.)

of the International Fire Service Council, at which Mons. Cazier (France), Mr. Sachs (England), Count Szechenyi (Austria-Hungary), and Herr Westphalen (Germany) were elected Vice-Presidents for the ensuing first four years, and the seat of the Council again fixed at Luxemburg. It will thus be seen that also on the International Fire Service Council the building side was duly represented, for besides the English representative being an architect, Herr Westphalen is by profession a building surveyor, who has only of later years become Fire Chief at Hamburg.

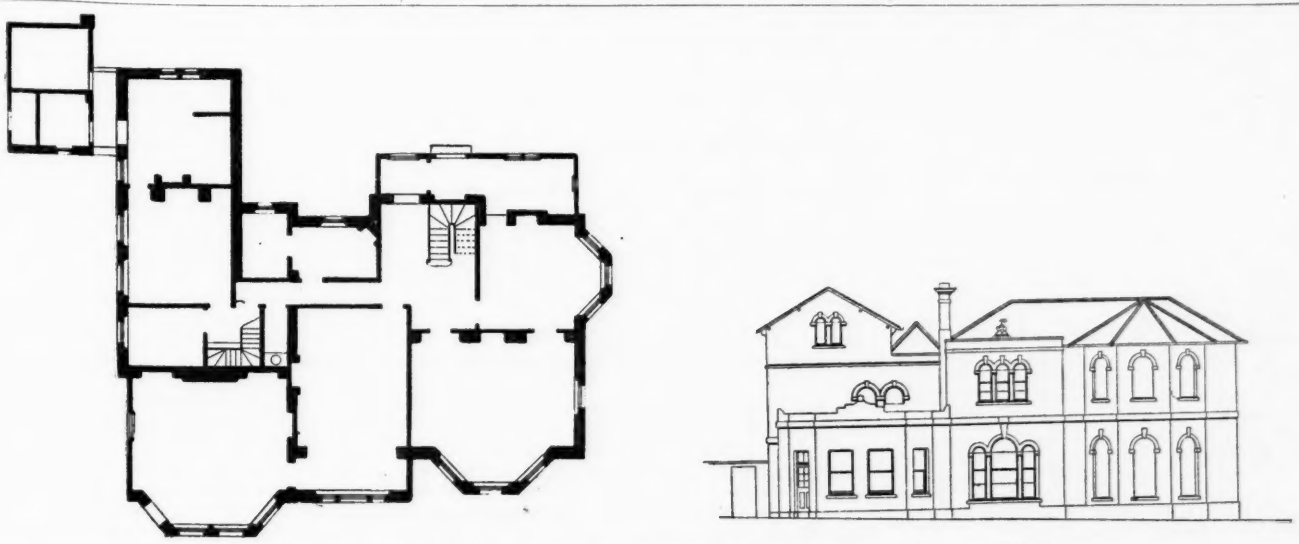
Among the work which the Council will probably be taking in hand will be the consideration of an International Fire Service Dictionary, in which not only the fire service terms, but many general building terms, may probably be included.

The Commissioners visited the scene of the large store fire at Budapest, and also the flour mills. But perhaps the most important visit at Budapest was the one paid by the Commission to the Royal Opera House, which has the first stage erected on the "Asphaleia" scheme and which is equipped with sprinklers. These sprinklers were put into action for the benefit of the Commissioners, the entire stage being flooded from top to bottom with a complete deluge of water.

As to Budapest generally, the development of the city has been much marked of late years. Innumerable new public buildings have been erected, and their façades are of considerable architectural importance. The new Royal Palace at Buda is now complete, and is also a very fine example of its class.

At Vienna, those members of the Commission who had visited it before did not find any very great progress in the development of that city during the last ten years; but such of the new buildings as were being put up are certainly of very substantial character, and all showed a full appreciation of the value of a good architectural frontage. From the Commissioners' point of view, the visit to the new Gerngross Stores, which were in the course of completion, and to the Court Theatre were probably the principal events. The Fire Brigade is undoubtedly a splendid one, but it lacks well-built stations.

At Munich the Commissioners certainly saw a great deal that was new and of first-class character. The new retail stores in course of erection there, for Messrs. Emden and Messrs. Tietz, were buildings of high order, carefully designed, well and rapidly constructed, and unique of their kind. They were of considerable



Penn House: Plan and El vation previous to the Alterations. (*See page* 316.)

architectural pretensions, and the architect's design had been well conceived and executed. The architect of both these places is Prof. Littman, who was also the architect of the new Regent Theatre, which is situated outside the town proper, and which was visited by the Commission. The large new fire station was also of considerable architectural merit, and far above the average of this class of building.

At Frankfort the party visited the new stores of Messrs. Schmoller. This, although still in the builders' hands, was in full working order, and very clearly showed the whole principles on which the stores are now laid out. It is obviously wise that these buildings are dealt with abroad under separate or special regulations by the local authorities, both as to building and maintenance. The fire risk of these buildings is enhanced by the enormous cubic extent occupied without due separation into individual risks. The new Municipal buildings were structures calling for the comment of the Commission, as also a number of the new public buildings, such as the post-office.

At Cologne there was seen an excellently built fire station, most carefully planned, and very charmingly though simply decorated. There was also the usual new store building (belonging to Messrs. Tietz), but of more than ordinary interest, owing to the many exceptional technical devices used in that building.

In the two last-named cities, Frankfort and Cologne, as also in Nuremburg, which was visited by the Commissioners, there were new theatres, which they went over most carefully. The one at Nuremburg was still in course of construction; the other two were completed. The Nuremburg one and that of Frankfort were from the designs of Herr Seeling, the well-known German theatre architect; the one at Cologne is designed by Herr Carl Moritz, who is an adherent of the "Art Nouveau" School. All three theatres contained much that was instructive, though little that was essentially novel, *i.e.*, novel as compared with what was to be seen some ten years ago when the evolution in theatre-building in Germany was taking place. All three were built by their respective municipalities; the Nuremburg one for both opera and drama, the other two for drama only. The municipalities who own them are to be congratulated on the very splendid buildings they have got, and, as far as we can judge, obtained at a very moderate expenditure, for the amount of work involved.

Speaking generally, throughout the journey the Commissioners were struck by the care taken in the construction of the buildings, notwithstanding the rapidity with which they were run up, and by the great interest shown by owners, whether business men or Corporations, that their buildings should be of architectural pretensions and be admired as works of architecture by their fellow citizens.

In conclusion, we should remark that the Commission had the benefit of having the whole of its programme most carefully mapped out in advance, with the aid of the British Consular Officers, and that the local authorities did their best to show the visitors what they wished to see. It is also needless to add that the Foreign Municipal Officials were most hospitable, as this is well known to all who have had occasion to visit the Continent.

Mr. Sachs acted as Chairman of the Commission. Mr. Ellis Marsland, of the Fire Prevention Committee, together with Mr. Horace Folker, of the National Fire Brigades' Union, acted as joint Hon. Secretaries. It is anticipated that a detailed illustrated report of the journey will be shortly issued by the British Fire Prevention Committee, and the publication will probably take the form of one of its usual red books.

OLD SCARBOROUGH.—A protest has been addressed to the *Times* against the proposal of the Corporation to remove the ancient market-cross from its present original site. As the writer further animadverts upon the alteration of the old names of some of the streets—for instance, "Merchants'-row" (the settlement of the Flemish traders) to "Eastborough"; "Blackfriarsgate" to "Queen-street"; and "The Common" to "Victoria-road"—we may remind our readers that, on August 27, 1892, we published a historical article upon Old Scarborough, wherein mention is made of the places cited, together with an account of the origin of the several "gates," the word "gate," for "street," being indicative of Danish occupation.

THE JUNIOR INSTITUTION OF ENGINEERS:

SUMMER MEETING IN GERMANY.

PERHAPS the decision that Germany should be the location of the present summer meeting of this society may have been regarded by some of its many friends as of too ambitious a character, but the great success of the gathering has justified in a most ample manner the Council's selection of the rendezvous. They had no doubt counted upon a warm welcome from the German engineers. It was unmistakably so, the members being received with the greatest kindness throughout the extensive tour, which included Dusseldorf, Oberhausen, Benrath, Elberfeld, Hanover, Berlin, Mariendorf, Charlottenburg, Leipsic, Frankfort-on-Maine, Hanau, Homburg, and the Rhine.

The proceedings opened on August 13, when in the evening at the fine Municipal Concert Hall at Dusseldorf the civic authorities tendered greetings on the Institution's first entrance to the Fatherland. Associated in the ceremony as hosts were the Institution of German Iron Founders, the Lower Rhine District Association of German Engineers, and the Dusseldorf Institution of Architects and Engineers. Mr. Samuel Cutler, jun., the Junior Engineers' chairman, on this occasion and at other times gave fluent utterance in the Teutonic tongue to the Institution's acknowledgments, as did also Mr. F. R. Durham, of Frankfort-on-Maine, the Hon. Secretary of the meeting.

The following day was spent in an inspection of the Dusseldorf Exhibition, under the guidance of Mr. Emile Hess, its engineering features, of course, receiving special attention. Next morning an early train was taken for Oberhausen, where are situated the great iron, steel, and engineering works of the Gutehoffnungshutte. Two divisions were formed for visiting them, one proceeding to the blast furnaces, steel works, rolling mills, etc., the other to the steel, iron, and metal foundries, engine and bridge works, etc. There appeared to be plenty of work under execution, and an extensive addition to the rolling mill was in course of building. After being entertained to luncheon in the Works Club House, the members went to the Benrather Crane Works, which is one of the largest of its kind in Europe and has attained such a well-merited reputation for the excellence of its products. Both steam and electricity are employed as motive power. The methods of testing the various parts, systems of erection, and other details were fully explained to the visitors.

On leaving Dusseldorf the party made for Elberfeld for the purpose of seeing the Langen Mono-Rail Suspended Electric Railway, which presents so many novel points of engineering interest. In this system the carriages are hung and travel from an overhead rail, which may be fixed at any level above ground or may be carried along the roof of a brick tunnel or iron tube. Another example occurs at Loschwitz, near Dresden. The Elberfeld line has a length of eight and a quarter miles and has been in operation since March, 1901. It now carries about 10,000,000 passengers per annum. Under the guidance of the engineers a complete inspection of the line was made, including car-sheds, power-house (current is supplied from the municipal works), stations, etc. In the afternoon the members arrived at Hanover, where on the next day the first visit was to Messrs. Korting Brothers' Works, erected in the year 1871, and now giving employment to 2,500 hands. The chief products are gas-engines, appliances for steam-users and manufacturers, pumps, boilers for steam and water heating, radiators, etc. Some special experiments with Korting injectors, steam-jet elevators, condensers, blowers, pulsators, etc., were carried out. The Korting ejector condenser is well known in England, over fifty electric-light and power stations being fitted with it. An interesting application of the spray nozzle was illustrated as it would be employed in cooling condenser water. It was also applicable to laying dust in colliery workings, purifying air of public buildings, damping tobacco, etc., cleaning blast and producer gases. Some powerful gas-engines were seen in the erecting shop, both of the Otto and the Clerk cycle. The former are built up to 200 h.-p. in one cylinder, and the latter single-acting up to 300 h.-p., or double-acting up to 1,500 h.-p. in one cylinder. The largest installation (40,000 h.-p.) of the Korting double-acting Clerk cycle engine is at the Lackawanna Steel Works. The importance of the heating engineering department of Messrs. Korting may be gathered from the fact that annually 5,500 tons of castings, 1,500 tons of wrought-iron tubes, and 33,000 valves are made use of. Hospitable entertainment followed the visit, and the Hanover Engine Works were then inspected.

They were founded in 1835 and have developed to such an extent that about 2,000 workmen are now employed. The manufacture of locomotives forms the principal work carried on, that department having been started in 1846. The total output to date has been close on 4,300, and forty engines can be fitted up simultaneously. The electric central station, with engines of 1,500 i.-h.-p., attracted special attention, and various processes with heavy tools, etc., were arranged to be going on during the members' tour of the works. The toast of the "Hannoversche Maschineban" having been observed on leaving, the members then made their way to the Westinghouse Brake Company's Works, the construction and operation of the brake being fully explained, with the aid of an experimental apparatus such as is installed at the London depot, King's Cross. The Hanover Gas Works were then entered, so that the Paris electro-turbine gas retort charging machine might be seen at work. The rapidity of its action was most striking, but as the machine has only just been introduced it is not possible to give definite results of its working at Hanover for any length of time. In carriages which were kindly provided by Mr. L. Korting, the engineer of the Works, and who, by the way, is President of the German Association of Gas and Water Engineers this year, the members then had a most enjoyable drive to Herrenhausen; the fountain display—a notable feature of the beautiful grounds—was seen.

Mr. Korting also acted as cicerone to the members on the following morning, when the Zoological Gardens, provincial museum, and other places were visited. In the afternoon came the journey to Berlin, which was reached at about seven o'clock.

Friday morning was occupied by a most interesting visit to the Berlin Electric Overhead and Underground Railway and to the works of Messrs. Siemens and Halske. Assembling at the Potsdamer Platz station of the railway, the party were met by the engineers and taken by train to the terminus of the line, Warschauer Brucke. The car depot and workshops were shown, and after proceeding by rail from Schleischer Thor to Mockern Brucke the members walked over the bridge to the power station of the railway. The plant here consists of three Borsig engines of 1,200 h.-p. maximum, and an engine of 1,800 h.-p. by the Gorlitzer Maschinefabrik. The dynamos are directly coupled to the engines and are shunt generators for 800 kilowatts at 750 volts, constructed by Siemens and Halske. After going through the junction triangle the party took train again to the terminus of the line, and at the Students' Union Club at Charlottenburg were entertained to luncheon by Messrs. Siemens and Halske, their works being visited in the afternoon.

In the large machine shop of the works the preparation and mounting of the various parts of dynamos, motors, etc., was seen. Other shops were occupied with resistances, starting and regulating resistances, apparatus for lifts, and accessories for lifts and cranes, switchboards and switches, high-current apparatus, cut-outs, and line articles. The manufacture of arc lamps was also shown, and in the testing-room a highly interesting collection of different types of lamps were seen running. The Institution's summer dinner was successfully held in the evening at the Central Hotel, Berlin, the opportunity being taken for presenting to Mr. Durham a leather writing-case suitably inscribed in expression of the members' appreciation of his valuable services as Hon. Secretary. On the following day the Mariendorf Gas Works of the Imperial Continental Gas Association were visited in the morning, and the Royal Technical High School at Charlottenburg in the afternoon. The gas works are of the most modern description and afforded the members an excellent example of the latest practice in that class of work, having been completed as recently as the autumn of 1901. Special features consist of the coal handling plant, inclined retorts coke conveying machinery, naphthaline washer, cyanogen washer, overhead loading station for the tar, ammoniacal liquor, etc., A new holder was seen in course of erection by the Berlin Anhaltische Co. The whole of the side sheets are

to be riveted by pneumatic riveters, air-compressing plant having been put down for the purpose. At the Charlottenburg School, where unfortunately there were no technical guides to show the members round, perhaps the most striking feature was the large laboratory containing representative gas, oil, and steam engines of every type, aggregating over 800 h.-p., with corresponding boiler power, by means of which the students could test under actual working conditions every kind of motive power plant. This visit concluded the programme of the first week.

On Monday afternoon, August 22, the party left Berlin for Leipsic, remaining there till Wednesday, when they went on to Frankfort-on-Maine. On the invitation and under the guidance of Mr. W. H. Lindley, an English engineer who has achieved great distinction on the Continent, the Water and Electricity Works at Frankfort and the Sewage Works at Hanau, all of which were designed and carried out by him, were inspected. The arrangements made for these visits were most excellent and might well be followed in this country. Previous to the members going over each works, Mr. Lindley, with the aid of diagrams and drawings, gave a general description in the form of a short lecture. Members were thus in possession of the general characteristics of the undertaking and in a much better position for seeking any special information having reference to their own branch of work. A fact which may not generally be known which was elicited in the course of the visit was that to Mr. Lindley is really due the introduction into Germany of the Parsons steam turbine of large power.

An excursion to Homburg took place on Friday afternoon, when the director of the Baths conducted the members over the old and new buildings, where baths of every description are obtainable; the eight mineral springs and the pumping plant for raising the water for use in the baths were also seen. On the historic Kurhaus Terrace dinner was served in the evening, followed later by the fireworks of the Annual Summer Festival. It was a delightful experience altogether. The next day the members travelled by train from Frankfort to Biebrich to join the Rhine express steamer for the trip to Bonn, and thence by train to Cologne, and so on to Flushing and England. It should be mentioned that two extra visits occurred, one at Berlin to Mr. W. Pittler's Experimental Works, and the other to Messrs. Pittler's Lathe Works at Leipsic.

APPLICATIONS UNDER THE LONDON BUILDING ACT.

THE Building Act Committee of the London County Council, at a meeting held on the 1st inst., dealt with the following applications under the London Building Act, 1894. The names of applicants are given in parentheses :—

Lines of Frontage and Projections.

St. Pancras.—Erection of a projecting clock at the Oxford Vaults, Kentish Town-road, St. Pancras, shown on the plans submitted (Messrs. Murray and Co.).—Consent.

St. George, Hanover-square.—Erection of a bay window in front of No. 3, Deanery-street, Park-lane, St. George, Hanover-square (Messrs. G. Trollope and Sons and Colls and Sons, Ltd., for Mr. J. G. Joicey).—Consent.

Wandsworth.—Erection of buildings on the east side of Streatham High-road, Streatham, on the Streatham Lodge estate (Mr. P. C. Davies).—Consent.

Bethnal Green, North-east.—Erection of buildings on the south side of Old Ford-road, Bethnal Green, between Nos. 12 and 30, with portions to an advanced line of frontage (Messrs. Davis and Emanuel for the East End Dwellings Company).—Consent.

Clapham.—Retention of a wooden porch at No. 233, Queen's-road, Battersea (Messrs. Fremlin Brothers).—Consent.

Clapham.—Retention of porches to eight blocks of residential flats on the west side of Lavender-sweep, Battersea, between No. 30, Lavender-sweep and Limburg-road (Mr. W. H. George).—Consent.

City.—Erection of projecting piers and cornices and an oriel window at Winchester House, London-wall and Old Broad-street, City (Mr. J. Belcher for the Trustees, Executors, and Securities Insurance Corporation).—Consent.

Dulwich.—Erection of a porch at No. 164, Forest Hill-road, Lewisham (Mr. H. M. Newlyn).—Consent.

Greenwich.—Erection of canopies to twenty-eight houses on the east and west sides of Kinveachy-gardens, Old Charlton (Messrs. Saywood and Rye.—Consent.

Lewisham.—Erection of an addition at the rear of No. 37, London-road, Forest Hill, to the line shown upon the plan submitted (Messrs. Dorrell Brothers for Mr. A. J. Dorrell).—Consent.

Marylebone, West.—Erection of an enclosed porch with steps and a wooden hood at No. 50, Maida-vale, St. Marylebone (Mr. T. F. Green for Mr. L. W. Green).—Consent.

Mile-end.—Erection of a wood and iron sign in front of the "Black Boy" inn, Mile-end-road (Mr. W. Husband for Mrs. E. A. Coake).—Consent.

Wandsworth.—Erection of porches to six semi-detached houses to be erected on the east side of Upper Parkfields, Putney (Mr. J. C. Radford).—Consent.

Wandsworth.—Retention of a projecting pent roof at No. 21, Lyford-street, Wandsworth-common (Messrs. J. A. J. Woodward and Sons for Mr. C. T. Coggin).—Consent.

Wandsworth.—Retention of a wooden porch and balcony and two bay windows to a building on the west side of Gwendolen-avenue, Putney (Mr. J. C. Radford for Mr. W. R. Williams).—Consent.

Woolwich.—Erection of porches in front of Nos. 59 and 60, Shrewsbury-lane, Plumstead (Messrs. J. H. and F. F. Hutchings).—Consent.

Woolwich.—Erection of a shop and studio on the north side of Eltham-road, Lee, at the corner of Meadowcourt-road (Mr. G. E. Clay for Mr. R. B. Daines).—Refused; undesirable to permit the existing frontage in Eltham-road to be disturbed.

Finsbury, Central.—Erection of a proposed building on the site of Nos. 61 to 71 (od numbers), inclusive, Collier-street, Pentonville (Mr. S. D. T. Pettit for Messrs. Everett and Co.).—Refused; for same reason as preceding.

Hackney, Central.—Erection of buildings on the south side of Darnley-road, westward of No. 1, to the line shown upon plan submitted (Mr. J. Hamilton for Mr. A. B. Salmen).—Refused; for same reason.

Hackney, North.—Erection of a one-story office building on the north side of Manor-road, Stoke Newington, eastward of No. 4, to line shown upon plan submitted (Messrs. Turner and Holditch for Mr. H. M. Nurse).—Refused.

Islington, West.—Erection of a one-story shed at the rear of No. 21 and 23, Victoria-road, Holloway, to abut upon Chalfont-road, to line shown upon plan submitted (Mr. H. O. Ellis for Mr. G. R. Tindall).—Refused.

Kensington, North.—Erection of a covered way at No. 24, Dawson-place, Kensington (Mr. J. W. Simpson for Mr. T. B. Wirgman).—Refused.

Kensington, South.—Erection of a one-story shop on the forecourt of No. 11, Beauchamp-place, Brompton-road, Kensington (Messrs. G. E. Hart and Co. for Mr. E. A. B. Wearing).—Refused.

Lewisham.—Erection of one-story shops in front of Nos. 86, 88, 90, and 92, Brownhill-road, Catford, to line shown upon plan submitted (Mr. T. A. Boughton for Mr. J. Allen).—Refused.

Westminster.—Erection of one-story shops in front of Nos. 79, 81, 83, and 85, Victoria-street, Westminster, to line shown upon plan submitted (Mr. B. Woollard for Mr. H. Webley).—Refused: it is considered undesirable to sanction the erection of the proposed shops on land at present in use by the public.

Width of Way.

Bethnal-green, South-west.—Erection of an addition to No. 453, Bethnal-green-road, Bethnal-green (Messrs. Harrington and Ley for Mr. J. Smith).—Consent.

City.—Retention of a one-story building on the western side of Swan-street, Aldgate, with the external walls at less than the prescribed distance from the centre of the street (Mr. A. Whitelaw for the London and North-Western Railway Company).—Consent.

Westminster.—Application of Mr. T. Kissack for an extension of the periods within which the re-erection of the rear portion of No. 6, Buckingham-gate, Westminster, at less than the prescribed distance from the centre of Stafford-place, was required to be commenced and completed.—Consent.

Woolwich.—Erection of houses with bay windows on the east and west sides of Back-lane, Artillery-place, Woolwich, and the widening of Back-lane as shown on plan submitted (Mr. H. O. Thomas).—Consent.

Deviations from Certified Plans.

Finsbury, Central.—Certain deviations from the plan certified by the District Surveyor so far as relates to the proposed re-erection of No. 85, Goswell-road, St. Luke's (Mr. A. Young for the Improvements Committee of the Council).—Consent.

Holborn.—Deviations from the plans certified by the District Surveyor so far as relates to the proposed erection of a building on the site of Nos. 20 and 22, Neal-street, Holborn, as shown upon plans submitted (Mr. M. T. Saunders for Messrs. Watney, Combe, Reid, and Co.).—Consent; but that the applicant be informed that the above consent must not be taken as in any way approving the water-closet shown on the ground plan, which is not in accordance with the Council's by-laws made under the Public Health (London) Act, 1891.

Strand.—Deviations from the plans certified by the District Surveyor so far as relates to the proposed re-erection of Nos. 48 and 49, Jermyn-street, St. James's, as shown upon plans submitted (Mr. W. Woodward for Mr. S. T. Miller).—Consent; but without approval of the pavement lights and vaults, which will require the sanction of the local authority.

Width of Way and Lines of Frontage.

St. George, Hanover-square.—Erection of a stone, iron, and glass porch at No. 73, South Audley-street, St. George, Hanover-square (Mr. P. Waterhouse).—Consent.

Strand.—Erection of a projecting clock and two oriel windows at Nos. 41 and 43, Wardour-street, Shaftesbury-avenue (Mr. H. M. Wakley for Mr. W. Clarkson).—Consent; but without approval of the pavement lights shown on the deposited plan.

Greenwich.—Erection of two wooden oriel windows at No. 7, Crooms-hill, Greenwich, in the position and as shown upon plan submitted (Mr. H. Bugden for Mrs. E. C. Crook).—Consent.

St. George, Hanover-square.—Erection of a one-story shop at No. 2, Princes-row, Buckingham-palace-road (Mr. E. Stevens for Mr. H. G. Pett).—Refusal; within the prescribed distance from the centre of the roadways.

Brixton.—Erection of buildings on the site of Nos. 422 and 424, Coldharbour-lane, Brixton (Messrs. W. and J. Peacock for Mrs. Lockhart).—Refused; less than prescribed distance from centre of street.

St. Pancras, West.—Erection of a water-closet on the forecourt of Nos. 13 and 14, Miller-street, Camden-town (Mr. T. F. Strutt for Mr. H. Ward).—Refused.

Line of Frontage and Construction.

Deptford.—Erection of a building to be used as a greenhouse and cycle-shed in the garden at the side of No. 144, Breakspears-road, Brockley (Messrs. Jenkins and Sons for Mr. H. J. Morriss).—Consent.

Width of Way and Temporary Building.

Rotherhithe.—Retention of a wood and iron coffee-house at the Rotherhithe-tunnel works on the north side of Rotherhithe-street, Bermondsey (Messrs. Price and Reeves).—Consent.

Working-class Dwellings.

Battersea.—Three intended dwelling-houses to be inhabited by persons of the working class, and proposed to be erected, not abutting upon a street, on a site at the rear of houses in Stainforth-road, Battersea (Mr. E. Cannell).—Consent.

Width of Way, Space at Rear, and Projections.

City.—Deviations from the plans certified by the District Surveyor so far as relates to the proposed erection of a building on the site of Nos. 4 and 6, Copthall-avenue, City (Messrs. E. Runtz and Ford for Messrs. J. Chessum and Sons).—Refused.

Line of Frontage and Space at Rear.

Wandsworth.—Erection of two buildings on the north-west side of High-street, Tooting, westward of Selkirk-road—extension of time (Messrs. D. Watney and Sons).—Consent; Messrs. Druces and Attlee (similar application) to be informed of this decision.

Space at Rear, Means of Escape, and Projections.

Strand.—Deviations from the plans certified by the District Surveyor so far as relates to the proposed erection of a building on the site of Nos. 29 and 30, St. James-street, and Nos. 26, 26A, and 27, Bury-street, St. James's, with projecting balconies and porch next St. James-street (Mr. L. W. Green for Mr. J. Gluckstein).—Consent; but not approving the water-closets in the basement, which do not appear to comply with the Council's by-laws made under the Public Health (London) Act, 1891.

Means of escape in case of fire proposed to be provided in sixth story of same new building.—Consent.

Formation of Streets.

Wandsworth.—Formation of new streets for carriage traffic out of Tooting-bec-road and Upper Tooting-road, Upper Tooting, Wandsworth (Messrs. Lucas and Sons for Mr. F. W. Lucas, Mr. E. Lucas, and Mr. H. Ericksen).—Consent.

Hackney, North.—Laying out of a new street for carriage traffic to lead from Amhurst-park-road to Stamford-hill, Hackney (Mr. C. Cheston for Mrs. E. M. Kelsey).—Consent.

Hammersmith.—Extension of the period within which a new street to lead from

Scrubbs-lane to Hithe-road, Hammersmith, was required to be clearly defined and thrown open to the public (Mr. E. Collins).—Consent.

Hampstead.—Extension of period for the new street, to be named Howitt-street, to lead from Haverstock-hill to Glenilla-street, Hampstead (Mr. C. T. Bentley).—Consent.

Battersea.—Variation from the plan sanctioned for the formation of two new streets at the rear of proposed buildings on the east side of St. John's-road, Battersea, between Battersea-rise and Beauchamp-road, so far as relates to a reduction in the number, and an alteration in the size, of the stables and stores in such new street.—Consent.

Greenwich.—Retention until August 23, 1905, of temporary gates at each end of the new street to lead from Kidbrook-grove to St. Germain's-place, Blackheath.—Consent; houses in the street not to be inhabited until all gates and barriers removed.

Clapham.—Laying out for carriage traffic of a street to lead from Kendoa-road to High-street, Clapham (Mr. J. Donkin for the executors of the late T. G. Foster).—Refused; street not being of the full width of 40 ft. clear.

Wandsworth.—Laying out of new streets for carriage traffic on the Fisher-estate, between Leigham-court-road and Valley-road, Streatham (Mr. J. S. Gabriel).—Refused; no direct communication, and portions of the gradients steeper than 1 in 20.

Formation of Streets and Lines of Frontage.

Norwood.—Formation of six new streets for carriage traffic on the Sanders-estate on the west side of Denmark-hill and east side of Poplar-walk, Herne-hill (Messrs. R. Ellis and Son for Mr. R. A. Sanders).—Consent.

Erection of buildings on a piece of land on the east side of Poplar-walk and south side of Ferndene-road, Herne-hill, to abut also on proposed new streets (Messrs. R. Ellis and Son for Mr. R. A. Sanders).—Consent.

Space at Rear.

Southwark, West.—Modification of the provisions of section 41 of the Act, so far as relates to the proposed erection of a cart-shed, and three stories over, on the east side of Gravel-lane, Southwark, to extend over part of the open space at the rear of a stable building on the north side of Orange-street (Mr. E. Carritt for Mr. J. Sainsbury).—Consent.

Wandsworth.—Modification of the provisions of section 41 with regard to open spaces about buildings, so far as relates to the proposed erection of a building on the south side of Vants-road, Tooting, with an irregular open space at the rear (Mr. W. Bartholomew).—Consent.

Space at Rear and Means of Escape from the Top of High Buildings.

Newington, West.—Modification of the provisions with regard to open spaces about buildings, so far as relates to the proposed erection of a building on the site of Nos. 17 and 19, Newington-causeway, Newington, at the corner of Union-road with an irregular space at the rear and to extend above the diagonal line (Mr. W. Gilbee Scott for Lord Radstock).—Consent; and also as to means of escape in case of fire.

Means of Escape from the Top of High Buildings.

City.—Means of escape in case of fire proposed to be provided on the fifth and sixth stories of a proposed addition to Winchester-house, Old Broad-street and London-wall (Mr. J. Belcher for Trustees, Executors, and Securities Insurance Corporation).—Consent.

City of London.—Means of escape in case of fire, proposed to be provided on the topmost story of Liverpool, London, and Globe Insurance Company's premises, at the corner of Lombard-street and Cornhill (Mr. J. Macvicar Anderson for the Company).—Consent.

St. George, Hanover-square.—Means of escape in case of fire, proposed to be provided on the fourth story of the Oriental Club, No. 18, Hanover-square (Mr. T. H. Watson for the Club).—Consent.

Buildings for the Supply of Electricity.

Bow and Bromley.—Plans for the construction of a pit or vault in front of the Glaucus-street generating-station (Mr. H. Heckford for the Council of the Metropolitan Borough of Poplar).—Consent.

Woolwich.—Plans for the construction of an addition to the engine-room at the electric light station, Globe-lane, Woolwich (Mr. F. Sumner for the Council of the Metropolitan Borough of Woolwich).—Consent.

Marylebone, West.—Plans for the construction of two cooling towers at the generating-station, Richmond-street and Salisbury-street (Mr. A. Wright for the Council of the Metropolitan Borough of St. Marylebone).—Consent.

Cubical Extent.

Lewisham.—Erection at the Century Works, Conington-road, Lewisham, of a covered way to unite the test-room block with the main shop, by which uniting the buildings will exceed 250,000 cubic ft. in extent (Messrs. Elliott Brothers).—Refused.

Dwelling-houses on Low-lying Land.

Camberwell, North.—Licence granted to the Metropolitan Borough Council of Camberwell for the erection of dwelling-houses on low-lying land situated in Beckett-street and Bailey-street, Camberwell, in accordance with plans submitted on their behalf by Mr. W. Oxtoby, Borough Engineer).—Consent.

Southwark, West.—Licence granted to the Housing Committee of the Council for the erection of a building on low-lying land in Webber-row site, Southwark, in accordance with the plan submitted on their behalf by Mr. W. E. Riley, Superintending Architect of the Council).—Consent.

COMPETITIONS.

BOYS' SCHOOL, DOUGLAS, ISLE OF MAN.—At a meeting of the Building Committee of the Douglas School Board, held recently, the Committee considered the report from Mr. E. R. Robson, of London, the architect appointed to advise the Board on the competitive designs sent in for the proposed new school in Demesne-road. Mr. Robson reported that in his opinion the designs submitted under the motto "Stabit" (the authors being Messrs. Bottomley, Son, and Wellburn, of Middlesbrough) for a central hall school were the best sent in. The Committee recommend that the designs of Messrs. Bottomley, Son, and Wellburn be accepted by the Board, subject to the conditions issued to architects in connexion with the competition.

BARNET ISOLATION HOSPITAL.—The committee have accepted the plans marked "Economy," by Mr. J. Hugh Goodman (Reading); and have awarded the premium of 30 guineas to Messrs. Woodrow and Hilsdon (Chancery-lane, London), and the premium of 20 guineas to Messrs. Nicholls and Hollyday (Birmingham).

PUBLIC LIBRARY, WHITEHAVEN.—In the above competition the first premium has been awarded to Messrs. Greig, Fairbairn, and Macniven, 31, York-place, Edinburgh; the second to Mr. W. A. Mellon, City-chambers, York; and the third to Mr. C. E. Hutchinson, 11, John-street, Bedford-row, London. The designs were to be on view at the Town Hall, Whitehaven, from Thursday to Saturday of the present week.

BOOKS RECEIVED.

REINFORCED CONCRETE. By Charles H. Marsh, A.M.Inst.C.E., A.M.Inst.M.E. (Archibald Constable and Co. 31s. 6d.)

BY NILE AND EUPHRATES. By H. Valentine Geere. (Edinburgh: T. and T. Clark. 8s. 6d.)

THE SEVEN LAMPS OF ARCHITECTURE. By John Ruskin. Pocket Edition. (George Allen. 4s. 6d. and 3s. 6d.)

CARPENTRY WORKSHOP PRACTICE. By Charles F. Mitchell and George A. Mitchell. (Cassel and Co. 1s. 6d.)

BUILDING STONES. Edited by Paul N. Hasluck. (Cassell and Co. 6d.)

ROAD AND FOOTPATH CONSTRUCTION. Edited by Paul N. Hasluck. (Cassell and Co. 6d.)

QUARTERLY JOURNAL OF THE SANITARY INSTITUTE. (Edward Stanford. 2s. 6d.)

Correspondence.

"THE DRAINAGE OF A HOUSE."

SIR,—Will you kindly allow me briefly to reply to Mr. Samuel Smith's letter in your last issue (September 17) *re* above?

My article, criticising Mr. Smith's paper, was not written with the object of showing the width of my own knowledge or the narrowness of another's, but simply to foster a desire to elicit intelligent discussion on the best methods of sanitation as applied to house drainage.

It has brought forth a reply from Mr. Smith, which shows, at least, a want of courtesy in descending to personalities. His strictures, however, are wide of the mark, and as I do not consider any good purpose is achieved by recrimination, I must therefore decline to be drawn into any disputation with him.

In conclusion, I may add I do not resent the judicious criticism of anything I have written, and still less do I want to force my views on anyone who disagrees with them.

W. R. PURCHASE.

The Student's Column.

NOTES ON PORTLAND CEMENT.

CHAPTER IX.—THE USE OF.

GREAT strides have been made in the last ten years in the manufacture of cement, and, although it is used for most purposes of building, etc., where at one time lime was the cementing material employed, it cannot be said that a proportional advancement has been made in its proper use, and one often hears the expression that it is too expensive, whereas, by judicious use, it may be employed cheaply and profitably.

The opinion so often expressed that a particular cement is bad is true only in rare instances, the cause of failure being generally attributable to improper handling.

Newberry says, "the first consideration in preparing cement concrete is to combine the materials in such proportions as to produce the greatest possible density. This is accomplished by using just enough of the finer material to fill the voids in the coarse material. The percentage of voids in the latter should in all cases be carefully determined. This is most simply accomplished by the use of a metal box of 1 cubic ft. capacity. This is filled with the material to be tested, well shaken down, struck off level, and weighed. Water is now poured in at one corner until it rises even with the surface, and the weight again taken. The difference is the weight of water filling the voids of the material. As 1 cubic ft. of water weighs 62·5 lb., from the weight of water found the percentage of voids can be calculated. In the case of sand this method will not answer, as it is difficult to completely fill the voids of sand by adding water. The voids can, however, be readily calculated from the weight of a cubic foot and the specific gravity. The specific gravity of quartz sand is 2·65. A cubic foot free from voids would therefore weigh 2·65 × 62·5, or 165·4 lb. The weight of a cubic foot of sand, well shaken down, is, however, found to be only 112 lb., a difference of 53·4 lb. The proportion of voids is therefore $\frac{53{\cdot}4 \times 100}{165{\cdot}4}$, or 32·3 per cent.

"The calculations of the proportion in which the materials are to be mixed is as follows:—Let us assume a sand with 32·3 per cent. of voids and gravel with 35·9 per cent. To fill the voids in the gravel with sand we shall require 35·9 volumes of sand to 100 volumes of gravel, or 1 to 2·8. To fill the voids of the sand with cement we shall require 32·3 per cent. of 35·9, or 11·6 parts by volume. The theoretical proportions will thus be cement, 11·6; sand, 35·9; gravel, 100; or, 1 to 3·1 to 8·6. It is a common practice to increase the proportion of sand more or less above that calculated to compensate for imperfect mixing, to obtain concrete of greater strength. This, however, is an error. There is one proportion, and one only, in which a given sand and stone can be mixed and give the minimum of voids. This is the proportion in which they should always be mixed, whether a rich or poor concrete is required. Cement 1, sand 3·1, gravel 8·6 may seem very poor concrete, but, in fact, is good, the secret of the quality being the correctness of the proportions.

"A small variation in the amount of sand or gravel will convert it into an inferior concrete. To improve the strength, cement only should be increased, the increase of sand would weaken the concrete; properly proportioned concrete even of 1 to 3 to 8½ is stronger than sand and cement mixture of 3 and 1."

For concrete work the quality of the sand, gravel, or stone has much influence on the finished work. The sand should be clean and sharp, not too fine, and, if containing any admixture of clay, it should be washed. In fact, it is not generally recognised that a very small percentage of clay has great effect in making a poor concrete. The gravel or stones should likewise be clean and hard. Soft, friable material is unsuitable for good work. The water should be free from clay or mud. On one occasion the author had the investigation of a complaint that the cement supplied for a certain job would not set. On proceeding to the work it was easily seen where the fault lay. The cement was being used for fireproof floors, the aggregate supposed to be coke breeze. This, however, was nothing but cinders from a refuse destructor, containing all kinds of rubbish, which formed a mud on the addition of water. When the cement was mixed with good, clean coke breeze it set quite satisfactorily.

One of the chief points to be observed in the preparation of cement mortar is that mortar which has commenced to set should not be mixed up again by the addition of more water, or the setting properties will be destroyed. On account of this, it is important for the consumer to know the setting time of the cement being used.

Unfortunately, it often occurs that the already set mortar is mixed with more water, which causes unjustifiable complaints that the cement will not set well and that it will not harden. The consumer would do well to indicate to the manufacturer the time of setting of the cement required and the use to which he proposes to put the cement; in this way a great many complaints might be avoided.

In a paper read before the Institution of Civil Engineers in 1887 on "Concrete Work under Water," the late Mr. W. R. Kinniple advocated the use of what he termed "plastic concrete" for such work. This concrete was prepared and allowed to partially set before being deposited under water. Mr. Kinniple claimed that by this means the cement lost but little of its strength, that where currents existed there was less chance of the cement being washed out of the aggregate, and the excessive proportion of cement otherwise required to allow for that washed away was avoided. Mr. Kinniple's experiments went to show that concrete of 3½ to 1, after setting out of water for eighteen hours and then rammed into moulds, will form a monolithic mass when afterwards placed in water; but that the strength of this mass will very much depend upon the time allowed for setting before deposition. If only eight hours elapse between mixing and deposition, there is practically no reduction in strength, but with a longer interval the strength is gradually reduced, until at about eighteen hours it is little more than half.

This subject was investigated by Faija, who read a paper before the Society of Engineers "On the Effect of Sea-water on Portland Cement." He designated Mr. Kinniple's concrete as "reset concrete," and stated that such concrete, to be of value, must be made with slow-setting cement, and it must be broken up and placed *in situ* at a particular period during its progress of setting. His experience was that the breaking up of reset concrete and the regauging should be done at the moment when, by ramming, the original water of gauging can be brought to the surface. If that time was exceeded, and the concrete, on being broken up and rammed, remained dry, then the result obtained was not satisfactory, and the cement in this condition would be subject to the dissolving action of sea-water. Faija's experiments confirmed this view, and the noticeable point in them was that with quick-setting cement the reset cement always showed a very considerable diminution in strength, whereas with slow-setting ones the loss was not so great.

Tampering with concrete which has commenced setting is a very dangerous practice, and no doubt accounts for some of the failures for which the cement has been blamed.

Another point, in preparing concrete, which requires attention is the addition of a proper amount of water. By the use of too much water a soft porous concrete is obtained, the top cannot be properly finished off, and scaling will take place.

Too little water will give a weak concrete, the top will be rough and wear badly.

As an indication of the wide variation in the use of water in mixing concrete, the replies from thirty-five railroad companies to a circular of inquiry from the Committee on Concrete Masonry of the American Association of Railway Superintendents of Bridges and Buildings, are in evidence. These replies show that ten prefer a dry mixture, five a moderately dry mixture, sixteen a moderately wet mixture, and four a wet mixture. According to the standard of the Committee, a dry mixture is one requiring repeated ramming to bring moisture to the surface, and a wet mixture one which quakes when slightly rammed.

For the benefit of their own practice, the bridge and building department of the Chicago, Milwaukee, and St. Paul Railway conducted some experiments on this subject.

Two boxes, each a cubic yard in capacity, were carefully made and balanced on bridge stringers, with a short piece of rail on the under side of each stringer, and a third piece of rail placed across and under the other two at the central point between the two boxes. The boxes were then made to balance by adding weights to the light end. In one box was placed a very wet concrete, and in the other a dry mixture. The concrete was made of 1 part cement, 3·2 parts gravel, and 3·6 parts of crushed limestone. The gravel was composed of 51 per cent. of sand, which made the actual proportions about 1 part cement, 2 parts sand, and 5 parts stone. The water used for the wet mixture was 82 per cent. of the volume of cement used, and for the dry mixture 44 per cent. The latter mixture, by hard ramming, could be made to quake slightly, and moisture could be seen on the surface of each 6-in. layer. It took thirty-five minutes to fill the box with dry concrete, and twenty minutes to fill the other with the wet mixture. As soon as the boxes were filled, the central rail was shifted until the cubes balanced. It was found necessary to move the rail 0·3 ft. towards the wet cube, showing that the wet concrete weighed 9·7 per cent., or 340 lb. more than the dry mixture.

When the concrete had set and the frame was removed, the difference in the appearance was very apparent. The face of the cube of wet concrete was smooth and compact, while that of the dry cube was full of voids and very rough, notwithstanding more labour was expended in placing the dry mixture. The cubes were allowed to stand on the balance thirty days, and observations taken to see if the loss of excess water in the wet concrete would appreciably diminish its weight, but no such loss could be observed. The cubes were then broken by drilling 6-in. holes across the centre of the top and side surfaces, and bursting open with plugs. It was found that the wet concrete was much harder to break than the other; and the cube of dry concrete broke vertically down to the centre of the cube, and then the fracture followed the horizontal layer, which marked the top of the first batch of concrete deposited.

The interior of the wet cube was a solid, compact mass, with most of the pieces of stone broken across along the line of the fractured cube; while the interior of the dry cube was full of voids and a much larger percentage of the stones were pulled out instead of being broken, as they were in the wet mixture. The results of the tests show (1) that a moderate excess of water is not injurious; (2) more labour is necessary in mixing and placing a dry concrete than a wet one; (3) it is impossible to get a dense concrete without using what is, theoretically, an excess of water.

The idea that a dry concrete gives the best results no doubt comes from the fact that in laboratory tests the best results are obtained when a minimum of water is used, but the conditions prevailing in the testing-room are widely different from those which exist in practical working.

For instance, in the testing-room every precaution is taken that none of the water used for gauging is abstracted from the cement, while in actual work the concrete may have to be laid on porous soil, through which some of the water will soak away, or the aggregate may be of a porous nature and absorb some of the water intended for the cement.

OBITUARY.

MR. BATY.—The death, in London, is announced of Mr. Sebert Conrad Elton Baty, Director of Public Works in Mombasa, East Africa Protectorate, aged thirty-eight years. Mr. Baty was the second son of the late Rev. J. Baty, of Roehampton. Having graduated at Cambridge University, whither he proceeded from St. Paul's School, he was appointed land surveyor in the Mauritius, and after two years' service in that capacity was appointed, in 1892, Government Surveyor and Superintendent of Public Works in Seychelles.

MR. ENFIELD TAYLOR.—We have also to announce the death of Mr. H. Enfield Taylor, of Chester, who carried on an extensive practice as a civil engineer in Cheshire and North Wales. Mr. Taylor was engineer to the great Orme Tramway, Llandudno, and to the Hawarden Waterworks Company; he held the appointment of acting conservator on the Board of the river Dee Conservancy, and during a long period was managing director of the Chester Race Company.

SIR THOMAS BROWNE MEMORIAL.—Mr. Henry Pegram, A.R.A., is appointed sculptor of a statue to be erected in the Haymarket, Norwich, to the memory of the author of "Religio Medici," "Hydriotaphia," "Garden of Cyrus," and other works. Sir Thomas Browne, *obiit* 1682, was buried in the church of St. Peter, Mancroft, in that city, but his remains have since been disturbed.

GENERAL BUILDING NEWS.

NEW PARISH CHURCH, SHERFIELD ENGLISH, HAMPSHIRE.—The new parish church at Sherfield English was recently consecrated. The design of the building is of late XVth century Gothic style, cruciform in plan, with chancel, choir, nave, north and south transepts, and north and south aisles, with a porch on the north side, and a heating chamber under the south transept. The church is planned to seat 180 worshippers, the nave, aisles, and choir only being utilised for seating, the north transept being at present used as an organ chamber, and the south transept as a vestry. The outside extreme length from east to west is 88 ft. 6 in., whilst the outside extreme width through transepts and choir is 51 ft. 6 in., and through nave and aisles 40 ft. 6 in. The height from ground-level to top of vane on spirelet is 87 ft. The church is built principally of red bricks, with dressings of Chilmark stone. The whole of the internal stonework is Bath stone. The tower has a square lower stage rising into an octagon, with angle pinnacles with carved finials and flying buttresses, and two tiers of traceried openings filled in with slate louvres, the bells being placed in this part of the tower. All the windows have traceried heads. There is a peal of eight bells, made by Messrs. John Taylor and Co., of Loughborough. The floor has been laid with Cloisonné ornaments by the Arrolithic Company. The artificial lighting is by oil lamps of forged iron and copper, the lamps being suspended by forged iron chains from the apex of the intrados of each arch. The greater part of the structural work of the church was carried out by Messrs. W. Roles and Sons, of Romsey, after which they transferred their contract to Messrs. Jenkins and Sons, Ltd., of Southampton and Bournemouth. The work has been carried out from the designs and under the personal superintendence of the architect, Mr. Fred Bath, Salisbury. Mr. W. Taylor, Salisbury, was the clerk of works.

NEW ROMAN CATHOLIC CHURCH, CATFORD.—The new Catholic Church of St. Cross, which, with a presbytery adjoining, has been erected in Sangley-road, Catford, was opened recently. The materials employed were brick and Portland stone, and the style of the building is Romanesque. Accommodation is provided for about 200 persons. The work has been carried out from plans provided by the late Mr. F. W. Tucker.

PRIMITIVE METHODIST CHAPEL, NEW SELSTON, YORKSHIRE.—On the 14th inst., the foundation-stones of a new Primitive Methodist chapel were laid at New Selston. The building is to cost 600*l*. The contractor is Mr. J. T. Brown, of Nottingham, the architect being Mr. J. Antcliffe, of Draycott.

NEW ROMAN CATHOLIC SCHOOL, COWDENBEATH, N.B.—A new school, which has been built in Stenhouse-street for the purpose of providing education for the Roman Catholic children in Cowdenbeath, was opened recently. The building was designed by Mr. W. Birrell, Kirkcaldy and Dunfermline, and provides accommodation for 400 pupils. Two doorways at either end—one for boys and the other for girls—open into a central corridor, off which there are eight classrooms. By means of Stone's patent sliding partitions the corridor and classrooms can be transformed into one hall, which outside of school hours it is intended to use for church purposes. The desks and other furnishings have been provided by James Bennet, Glasgow. To a height of several feet the walls are finished with varnished woodwork. Two cloak-rooms are provided besides private rooms for the principal teachers. Play-sheds have been erected in the playground. The cost of the work is 3,000*l*. The following are the principal contractors:—Builder, Andrew Wilson, Cowdenbeath; joiner, Wm. Simpson, Kirkcaldy; plaster, John Paul and Sons, Cowdenbeath; painter, Andrew Allison, Cowdenbeath; plumber, Alex. Rolland and Co., Dunfermline; heating (by hot-water pipes and radiators), Dilworth and Carr, Preston.

NEW SCHOOLS, BURRADON, NORTHUMBERLAND.—On the 17th inst. new council schools were opened at Burradon Colliery. The building has been erected on the central hall principle, and provides accommodation for 750 boys and girls. Three classrooms are placed on the west side of the hall, while two long corridors run at right-angles to the hall, and from these are entered seven other classrooms, including cookery-rooms, teachers' room, cloakroom, and lavatories. The whole has been designed by Mr. W. Bedlington, architect, Newcastle, while the contract has been executed by Mr. Amos Gray. The cost of work has been 9,000*l*.

BUSINESS PREMISES, BRISTOL.—The reconstruction of the premises of Messrs. E. S. and A. Robinson, at the corner of Victoria-street and Redcliff-street, Bristol, has now been completed. The work has been carried out

by Messrs. Cowlin and Son, from plans prepared by Messrs. Oatley and Lawrence.

NEW WAREHOUSE, BRISTOL.—A new tea warehouse has been erected on Redcliff Hill Bristol, for Mr. F. Budgett. The building has a frontage of about 60 ft., and is of Cattbrook bricks. The electrical work has been carried out by Messrs P. Jolin and Co., Bristol. Messrs. Wilkins and Sons were the general contractors, and the architect was Mr. H. C. H. Tarr, of Bristol.

NEW OFFICES, BIRMINGHAM.—The new offices of the Weslyan and General Assurance Society in Steelhouse-lane, Birmingham, have been completed. The premises are of classic design, the principal elevations being constructed with Portland stone and grey granite, with red granite columns, the roofs being covered with green Westmorland slates. The structure covers an area of 12,500 sq. ft., having a frontage to Steelhouse-lane of 100 ft., and to Slaney-street, 120 ft., the total height from lowest floor to ridge being 120 ft. The sub-basement is used as a heating chamber and provisional space for future electric generating plant. The basement is arranged as a stationery store, etc. The ground floor office is approached from Steelhouse-lane by a portico entrance, the clerks' entrance being also from Steelhouse-lane. The entrance lobbies and principal doors, also counters, panelled dadoes, etc., are of polished teak, and the interior columns and pilasters are Scagliola marble. The board-room, manager's rooms, committee-room, and other private offices are upon the first floor, and approached by a flight of granolithic stone stairs, the entrance hall and corridor being paved with marble terrazzo, and dadoes lined with glazed tiling and oak. The remaining space upon first, second, and third floors are fitted up for a staff of clerks. A hydraulic passenger lift runs from the level of sub-basement to the highest floor, also three small hand lifts for the various departments. The caretaker's rooms occupy part of upper story. The building is lighted by electricity, the main switchboard being fixed in the basement with main switches to control lights upon each floor. The heating is by means of low-pressure hot water, about two miles of pipes, equal to 4 in. diameter, being used. The strong-rooms have a superficial floor space of 3,252 sq. ft., and are fitted up with iron doors, racks, and shelves, which were supplied by Mr. John B. Field. The heating has been carried out by Messrs. G. N. Haden and Sons; the electric lighting by Mr. Walter S. Vaughton; the internal plumbing and sanitary work by Mr. Edward Hill; the external plumbing by Messrs. W. Woodfull and Son; the electric fittings by Messrs. S. Heath and Son, all of Birmingham. The hydraulic and other lifts were supplied by Messrs. Archibald Smith and Stevens, Battersea. The builders are Messrs. John Bowen and Sons, of Birmingham, and the architects Messrs. Ewen Harper and Brother, also of Birmingham.

FEVER HOSPITAL, LEEDS.—The new Leeds Fever Hospital is to be opened shortly. The hospital has been built on the one-storied pavilion principle, the various buildings being isolated from each other, the connexion being by covered ways, beneath which runs a continuous subway for carrying pipes and electric wires. The principal covered way is a quarter of a mile long. There are about twenty pavilions, each of which contains thirty beds, divided into wards of fourteen beds each, and two single-bed wards for private patients. A feature of the new pavilions is that they are raised on arches 5 ft. above the ground, and in the resulting open space beneath the floors run the water pipes and electric wires. Workmen will thus be able to make repairs and sweep the chimneys without entering the wards. Under normal conditions accommodation will be afforded for 240 scarlet fever patients, sixty diphtheria, 104 enteric, and forty-eight isolated cases—making a total of 452, whom it is possible to treat at the same time. Apart from the pavilions, there are administrative and residential blocks. The nurses' home contains accommodation for 100 nurses, and seventy female servants will be lodged in the servants' home. There will be in addition a male staff of over thirty, and sixteen cottages have been provided for married servants. The other buildings include waiting and discharge rooms, operating theatre, laboratory, mortuary, ambulance stables, laundry, and kitchens. There is a water and clock tower 110 ft. high. About 30,000 gallons of water are stored in the tower in case of a failure of the ordinary supply from the city mains. The buildings are of brick, with stone dressings, and electricity, generated on the spot, will be used throughout. Within a short distance of the fever hospital stands the smallpox hospital. This institution has been occupied for some months. There are here three main pavilions, affording accommodation for ninety smallpox patients and fourteen isolation cases, in addition to nurses' and servants' homes and administrative buildings. There is no engine or boiler-house at this hospital, as it will be worked from the fever hospital. The contract for both hospitals was obtained for 200,000*l.* by Messrs. H. Arnold and Sons, of Doncaster. The architect is Mr. Edwin T. Hall, of London, and Mr. A. Turner represents the Leeds Corporation as clerk of works.

WORKMEN'S CLUB, USHAW MOOR, DURHAM.—The new club premises for workmen which have been erected at Ushaw Moor were recently opened. The building occupies a site in Station-road, and has cost 7,000*l.* There are a bar, sitting-rooms, and a hall capable of seating 700 people, also library, reading and billiard rooms, and other rooms for games. Mr. George Ord, of Durham, was the architect, and Messrs. Walton Brothers, of Crook, the builders of the new premises.

PUBLIC LIBRARY, MOTHERWELL, N.B.—The memorial-stone of the new Motherwell public library was laid a short time ago. The building is situated in Clyde-street, and will consist of a lending library of 30,000 volumes, reading-room for 100 readers, juvenile room, reference library, ladies' room, lecture-hall and museum, recreation-room, etc. The architects are Messrs. Greig, Fairbairn, and Macniven, Edinburgh.

YOUNG MEN'S CHRISTIAN ASSOCIATION PREMISES, BIRMINGHAM.—The new premises of this association, which are being erected at Dale-end, Birmingham, are now nearing completion. The building is designed in the Renaissance style, the principal features being the entrance arch and the oriel windows. The patent casements are filled with leaded glass of graceful pattern. The structure has a frontage of 98 ft., and is five stories high, with a double basement. There is an oak-fitted vestibule and a reception-hall, or "lounge," 58 ft. by 31 ft. Opposite the entrance is an arcade supported on scagliola pillars, and the centre will be occupied by an ottoman. There is a lecture-hall, which is 58 ft. by 36 ft. A larger hall is to be erected, when funds are available, on a piece of land reserved for it on the left of the existing hall. Opening out of the reception-hall is the assistant secretary's office, and a staircase leads down to the two dining-rooms and smoking-room, the walls of which are covered with cream and blue tiles. The main staircase, which is fireproof and provided with wrought-iron banisters, leads to the reading-room on the first floor, the walls of which are coloured a neutral grey, the floor being polished pitch-pine. The tables and reading-desks will be of fumed oak, and the seats will be upholstered in green pegamoid. On the same floor is the religious meetings-room, and there are also offices for the general secretary, accountant, and clerks. On the next story higher is the educational department. A separate staircase leads to the hostel, which comprises about forty bedrooms of various sizes, and a boarders' sitting-room. There are bath-rooms and lavatories on each floor. The rooms are all lighted by electricity, and there are electric bells in each of the bedrooms. A well has been prepared for a passenger lift, and service lifts are already provided. The furnishing contracts have been shared between Messrs. Chamberlain, King, and Jones, and Messrs. Holliday, Son, and Co. The gymnasium is situated at the back of the main building, and its floor space is 88 ft. by 55 ft. The gallery is designed to serve as a running track, about twenty laps to the mile. The accessories to the gymnasium include a plunge-bath, needle-baths, and spray baths. The work has been carried out by Mr. William Bishop, of King's Heath, from the plans of Messrs. Ewen and Alfred Harper, at a cost of over 30,000*l.*

NEW WATERSIDE DEPOT, VICTORIA AND ALBERT DOCKS.—The Great Western Railway Company have opened a new waterside depôt at the south side of the Victoria Dock, near the water channel leading to the Albert Dock. The following is a list of the contractors:—Steel work, Messrs. Cross and Cross, Walsall; electric cranes, etc., Messrs. Crompton; construction of wharf, The London and Tilbury Lighterage Constructing and Dredging Company. The plans were prepared in the Great Western Railway Company's engineer's office at Paddington.

NEW ALMSHOUSES, WOOD GREEN.—The new almshouses, which have been erected in Nightingale-road, Wood Green, were opened recently. The buildings have been erected by Mr. C. Gray Hill, from plans prepared by Mr. A. W. S. Cross, architect.

BANK PREMISES, BYKER.—The opening of a new branch of the savings bank at Byker took place a short time ago. The banking-room, with strong-room and lavatory, occupies the whole of the ground floor, with the main entrance in Shields-road and the exit in Heaton-road. The design is Renaissance in treatment, and is faced with buff terra-cotta and brick on a polished granite base. The roof is covered with green slates, and the floors are chiefly of wood on steel girders. The banking-room is warmed by hot-water radiators. The contract has been carried out by Mr. E. T. George, Newcastle. The sub-contractors were:—Messrs. Kirk and Dickinson, slaters' work; Matthew Charlton, plumbers' work; John Chapman, plasterers' work; James Small, painter and glaziers' work. The granite, mosaic floor, hardware, strong-room door, and heating apparatus were supplied by Messrs. Emley and Sons. Mr. John Richley acted as clerk of the works, and Mr. Stephen Piper, Newcastle, was the architect. The total cost of the building has been about 6,800*l.* The electric lighting arrangements were entrusted to Messrs. Robson and Coleman, Newcastle.

STAINED GLASS AND DECORATION.

BOLTON.—Under the instructions of Messrs. Potts, Son, and Hennings, of Bolton, a stained-glass memorial window has been erected in the Delph Hill Wesleyan Church. The artist was Mr. W. Camm, of Smethwick.

WEST HARTLEPOOL.—Two memorial windows have been erected in the Park-road Presbyterian Church, West Hartlepool, in memory of the late Sir William Gray and Alderman Lauder. The Gray window, which was unveiled by Lady Gray, has the subjects "The Sower" and "St. Paul Preaching on Mars' Hill." The family arms are in the tracery. The Lauder window, the gift of Colonel Lauder, J.P., and Mrs. Pyman, the latter of whom unveiled it, was similar in character and treatment, having "The Christian Soldier" and "The Christian Pilgrim" as figure-subjects, with the family arms in the tracery above. The windows are from the studio of Mr. W. Camm, Smethwick.

SANITARY AND ENGINEERING NEWS

SEWAGE AND DESTRUCTOR WORKS, HYDE.—At the meeting of the Manchester branch of the Association of Managers of Sewage Disposal Works, held recently at Hyde, Mr. T. Horrocks read a paper describing the sewage and destructor works now in operation at that town. In the course of his remarks, he said that the original works were designed and carried out by Mr. Jos. Mitchell, the Borough Surveyor, and were formally opened in August, 1893. They comprised a destructor building and sewage works buildings, with the necessary engines, pumps, and machinery. He then gave a detailed account of the treatment to which the sewage was subjected, and remarked that the treatment did not meet with the approval of the Joint Committee, who began to put pressure upon the Corporation to improve their ways. Various new experiments were tried, and eventually it was decided to give the bacterial process a trial. Accordingly, after conferring with Mr. C. Whittaker, Sewage Engineer of Accrington, it was resolved to construct a small experimental plant, and this was in operation upwards of two years, and uniform good results were obtained. In 1901 the Sewage Works Committee had under consideration the advisability of obtaining independent expert opinion as to the wisdom or otherwise of adopting this system of sewage treatment on a permanent basis. As a result of their deliberations Mr. Frank Scudder, F.I.C., F.C.S., of Manchester, was invited to take the Whittaker and Bryant filter under control, subject the same to such tests as he deemed, and report upon same when satisfied. Mr. Scudder, in his report, expressed the opinion that the Whittaker and Bryant filter was the one best adapted to the circumstances obtaining at Hyde Sewage Works, and upon this favourable report the Council felt justified in adopting the system on a permanent basis. In the meantime a scheme had been formulated for the conversion and extension of the existing works, at an estimated cost of over 22,000*l.*, and was presented to the Local Government Board, eventually obtaining that body's conditional consent. The new extensions were commenced in April, 1902, and were now nearing completion. The whole of the new work had been carried out by Mr. Mitchell, he (Mr. Horrocks) acting as clerk of the works. Mr. Horrocks then gave a description of the present-day plant, and went on to state that, having regard to the fact that Hyde sewage is exceptionally bad, the development, or should he say *dénouement*, of the scheme, would be watched with interest by many authorities and other persons interested with sewage disposal. Their final effluent was excellent, and remarkably free from smell, and, he believed, sufficiently innocuous to pass into any river. The total area of the Borough of Hyde was 3,072 acres,

and the population at the last census was 32,766. This, calculated upon an average flow of 1,000,000 gallons, was rather more than thirty-three gallons per inhabitant. There were also eighteen miles of main sewers and ten miles of private street sewers.

SEWERAGE SCHEME FOR LEEDS.—It is stated that Messrs. J. Mansergh and Sons have made their report, at the invitation of the Corporation, upon a scheme for a new system of sewerage framed by the City Engineer in consultation with some leading specialists. Provision will be made to meet the requirements of an estimated population of some 600,000 persons, and it is recommended that extensive works for the treatment of sewage should be established at Gateforth; the computed outlay upon the first portion of the entire project amounts to one million sterling.

MISCELLANEOUS.

CEMENT INDUSTRY IN AUSTRIA.—Mr. H. R. Churchill, British Consul at Trieste, reports that the consumption of Portland cement there during 1903 was somewhat greater than that of 1902. A considerable quantity of cement is at present used for the construction of the new Tauri railway, and the manufactories of the Alpine regions of Austria will have for this reason sufficient work for several years. The prices of cement, compared with those of 1902, are not higher, and the trust of Austrian Portland Cement Manufacturers does not, it is asserted, intend to increase the prices. All the twenty manufactories that are providing for the consumption of Austria belong to the trust; arrangements also exist with fifteen manufactories of the interior of Austria and foreign countries which, within certain limits, stand in with the trust. The Austrian cement export to foreign countries was of small importance last year, not only because many Austrian manufactories are too far from the sea, but principally because there is an enormous over-production, as many new manufactories have been set up lately in other countries. An establishment for the manufacture of Portland cement will be erected near Albona, in Istora, the product of which is intended entirely for export. They have in the neighbourhood immense quantities of stone adapted for the manufacture of cement, and also a coal mine (Carpano-Vines), all situated close to the port of Rabaz. A cement manufactory is also projected at Servola, near Trieste.

BIRMINGHAM MUNICIPAL SCHOOL OF ART.—The architectural class meets at the Central School throughout the session on Mondays, Tuesdays, Wednesdays, Thursdays, and Fridays, from 7 p.m to 9 p.m., and on Thursdays, also, from 5.45 p.m. to 7 p.m. The subjects taken are:—"Architecture (according to Government syllabus)," by Mr. A. Freeman Smith; "Architectural Design," by Mr. Edwin F. Reynolds; "Architectural History," by Mr. W. H. Bidlake, M.A., A.R.I.B.A.; "Building Construction and Drawing (according to Government syllabus)," by Mr. Ralph Berrill, A.R.I.B.A.; and "Geometry—Practical Plane and Solid," by Mr. A. Freeman Smith. Mr. Alfred W. Baylis will, throughout the session, lecture on "Taking Builders' Quantities," on Wednesdays, from 5.30 p.m. to 6.55 p.m.

PICTURES IN POTTERY.—Messes. Doulton and Co. send us a very artistically got-up small book on this subject, containing a number of illustrations on a small scale of tile-formed pictures which they have executed as mural decorations in hospitals and other buildings, prefaced by a short account of various methods of faïence and tile decoration, ancient and modern.

CHAINED BOOKS IN LIBRARIES.—The cheapening of books has increased their vogue, but it has lessened their esteem. A book is not nowadays the precious thing it once was. Time was when a Bible cost 500 crowns—some 2,000*l.* of our present money. No wonder it was chained in churches. The Black Books of Lincoln's Inn show that this practice of chaining obtained there. There is an entry during the reign of King James I.:—"That decent stooles be provided, and that movable desks be also made and chains for the books"; and a few years later the Inn payments include 20s. for twenty dozen of chains and rings for the library, and there is a fresh order made that "all considerable bookes be chayned." It appears that none of the existing books in the library retain their chains or any part of them; but a considerable number—about forty—still have riveted to the binding the ring or hasp by which the chain was attached, and many more show the mark left by rings now removed. The "movable desk" and the "decent stoole" were essential appurtenances of a chained library of any size. Even the zeal of a mediæval student was not equal to holding a chained folio. In the accounts of the Middle Temple "chayns for the bokes of the librarie" is a constantly recurring item; and a reader of Gray's Inn, in bequeathing his library, gives 40s. to the intent that he—the trustee—"maie by chaynes fasten so many of them in the librarie at Gray's Inn as he shall thinke convenyente." A chained library in all its quaint simplicity may still be seen at Wimborne Minster, but the room is so small that the huge tomes can be deposited on a central table, to which the reader drags at each remove a lengthening chain.—*Law Journal.*

ASSOCIATED PORTLAND CEMENT MANUFACTURERS.—The fourth annual report of this Company states that, owing to the competition which the depression of trade has intensified, the selling price of cement has again fallen, while the higher price of coke has made fuel dearer for the year. The rotary kilns at Swanscombe and Arlesey have been working satisfactorily, and have produced an increased tonnage at a reduced cost. The largest of the Northfleet works has been equipped with a similar plant, and favourable results are anticipated for the current year from all these installations. The directors have appointed Mr. H. Osborne O'Hagan, who has rendered considerable and valued services to the Company during the last four years, to a seat on the Board, and to the offices of a Vice-Chairman of the Company, and a managing director. They will ask the shareholders to confirm their action.

THE WISHART PORT, DUNDEE.—We are glad to learn that the Town Council of Dundee have determined to preserve the old Wishart Port, the demolition of which was threatened. It is not a monument of architectural beauty, but it is a very interesting relic of the ancient history of the town; and there is such a disposition among municipal officials at present, under the idea of "improvement," to sweep away old buildings, that one is the more pleased to find those of Dundee forming an exception.

PROPOSED MODEL LODGING-HOUSE, CONSETT, DURHAM.—On the 7th inst., at the monthy meeting of the Consett Urban District Council, the committee recommended the Council entering into a provisional agreement for the purchase of 1,115 sq. yds. of land in Steel-street, Consett, from the Consett Iron Company, for 227*l.* 5s., and that the Surveyor (Mr. W. S. Snell) be instructed to prepare plans and specifications of the probable cost of the building. It was suggested that the Surveyor first prepare the plans and specifications, and that the whole question, as well as the petition, be considered at the next meeting.

WAR MEMORIAL, SHEFFIELD.—A memorial is to be erected in the Sheffield Parish Churchyard to the officers and men of the York and Lancaster Regiment who fell in the Transvaal war. The monument will be 12 ft. from the ground, and will resemble a screen. The base will be of granite, and on each side will be an octagonal pillar, also in granite, about 9 ft. high and 14 in. in diameter. The space of 8 ft. between these pillars will be filled by bronze panels. The design is by Messrs. J. D. Webster and Son, architects, Sheffield, and the bronze work will be executed by Messrs. J. Starkie, Gardner, and Co., London. The cost will be about 450*l.*

CAPITAL AND LABOUR.

STATE OF TRADE IN SOUTHPORT.—The building trade in Southport is worse than it has been for the past thirty years, a large number of joiners being out of work. The depression is even more marked than it was last winter. Southport suffers more severely than other towns because the men have to depend on a residential population. There is already some distress evident. In the plumbing trade the outlook is very disappointing, and it is feared the winter will be a very severe one. The outlook is also extremely bad for the painters. There are 100 painters out of work in Southport at the present time, and as there are no large contracts to let things are assuming a serious aspect. One of the leading joinery firms is only working seven hours a day with half a dozen men, and this seems to be the rule adopted by others in the town.

BRICKLAYERS' DISPUTE, TEES-SIDE.—A conference has taken place between the master builders of Tees-side and the Hartlepools and the operative bricklayers with regard to the dispute, and it was agreed that the wages should be 9½d. per hour and the walking-time rule altered to one mile. The masters asked that there should be no limit with regard to apprentices, except legally binding, but the men asked that there should be specific terms with regard to apprenticeship, and that the number of apprentices should be governed by the number of bricklayers employed. The masters will meet to vote on this proposal.—*Yorkshire Herald.*

PATENTS OF THE WEEK.

APPLICATIONS PUBLISHED.*

20,358 of 1903.—THE WORMALD PATENT LOCKS COMPANY, LTD., and A. H. WORMALD: *Locks and Keys for the same.*
A means for safeguarding locks, which consists in forming or providing the key way of the lock with a projection or projections, and the key with a corresponding slot or slots, or *vice versâ*, so as to guard the key way and prevent the entrance therein of "unauthorised" keys.

21,657 of 1903.—D. A. PRUST: *An Attachment for Tables, Desks, Cabinets, and the like.*
This consists in the attachment of weights, by means of cords passing over pulley wheels, to the movable inner tray of the table, desk, or cabinet, in such a manner that the weights form a counter-balance to the tray and its fittings, and so assist the said inner tray to be raised and lowered automatically, by the opening and closing of the two hinged flaps, which form the cover or top of the said table, desk, or cabinet.

22,657 of 1903.—J. E. YORKE: *A Fastening for Hinged or Pivoted Articles.*
This relates to a fastening for hinged or pivoted articles, consisting of a pin or its equivalent fixed to one part, and a sliding plate secured to the other part, said sliding plate being formed with one or a pair of inclined striking faces, and a slot or recess to engage said pin.

22,741 of 1903.—F. W. ADAMS: *Door Springs.*
A door spring, consisting in the combination with the pivot pin on which the door is hung, of an arm connected by a flexible member, such as a chain, to the end of a lever, and of a coiled spring acting upon the said lever through the medium of a ratchet and pawl device.

23,411 of 1903.—J. J. HEALY: *Barge Courses and Angular Barge Tiles for Roofs, Rendering Barges Wind and Weatherproof.*
An angular barge tile, having one or more slotted screw holes in the vertical wing, to admit of the tile being secured, by means of one or more screws to the barge board, or to the gable rafter.

23,535 of 1903.—J. THOMAS and J. FOSTER: *An Automatic Lubricator for the Eccentric Shafts of Stone Breakers.*
Instead of oiling the eccentric shaft by means of an oil-box cast on or bolted to the top of the pitman as hitherto, the oil-box is cast on or bolted to the front of the pitman, from this oil-box two holes are drilled which go to an inner oil-well in which a revolving brush is inserted, or a felt roller mounted on two small springs, these springs keeping the brush or felt roller on the eccentric shaft, and by the eccentric shaft being turned the brush turns round also with it, and thus cleanses the eccentric shaft and lubricates it at the same time.

11,513 of 1904.—C. LEHMANN: *Presses for Moulding Bricks of Beton, and the like.*
An apparatus for the manufacture of bricks of beton, and the like material, comprising, in combination, a support, a plate fixed on the top of said support, provided with a suitable opening, a mould placed over said opening, a movable plate at bottom of said mould, a toothed gearing for lifting said bottom plate, and a hand lever for operating said toothed gearing, a removable cross-partition wall for the mould provided with vertical slots, removable longitudinal partition walls in the mould guided in suitable slots of the front wall of the mould, a bar connecting the front ends of the removable partition walls, and a guide fixed on the table for guiding said removable partition walls.

12,257 of 1904.—E. G. GONZELEZ: *Combination Furniture for Clinical and other purposes.*
This consists in the combination with a stand for clinical and other purposes of a commode arranged between the uprights thereof, and connected therewith by parallel joints or like connexions, which will permit it to be readily drawn out for use and restored to place.

12,798 of 1904.—R. MERKEL: *Chimney Cowls.*
A chimney cowl, in the lower part of which are outlets running upwards, the distinguishing feature being that the upper part of the cowl is shaped like a mansard roof, its primary form being that of a rhombus or rhomboid, and is provided inside with a partition and on two opposite sides with openings so that the smoke escapes without hindrance, irrespective of the side on which the wind strikes against the top of the cowl or the partition.

15,569 of 1904.—J. NOLTE: *Fireproof, Waterproof, and Weatherproof Structures.*
Fireproof ceilings and walls, constructed with sheet-iron framing, characterised by the fact

* All these applications are in the stage in which opposition to the grant of Patents upon them can be made.

that the principal beams or girders are formed of sheet or plate iron which is stiffened by laterally riveted transverse joists, the extremities being placed upon plates or angle pieces, whilst the joists are provided at their lower part with teeth or projections which secure the layer of concrete with which the panels of the ceiling are filled.

16,022 of 1904.—A. J. BOULT (J. Haslam): *Construction of Skylights.*

A sash bar, consisting of a bulbed head at the superior end of the web of the bar, a wide base to the sash bar, a cap adapted to fit over the contour of the superior part of the sash bar, and a closing plate at the end of the bar, the same being adapted to prevent the cap from slipping or sliding off the bar.

16,027 of 1904.—J. W. CRAVEN: *Pug-mills.*

This consists, in the combination with pug-mills, a bearing surface, race, or receiver, on the upper end of the pug-mill shaft and an inverted bearing surface, race, or receiver, rigidly supported above the said pug-mill shaft and bolts or rollers, carried between the said bearing surfaces, races, or receivers.

20,609 of 1903.—T. C. FAWLEY: *Construction of the Ceilings of Rooms of Buildings.*

A construction of ceiling for the rooms of buildings, characterised by a shallow tank or series of tanks of metal, or any suitable fire-resisting material for water, said tanks being supported by any suitable means, and means for supplying water to such tank or tanks.

23,069 of 1903.—J. STOTT: *A Construction of Apparatus for Filtering, Humidifying, Cooling, or Disinfecting Air to be Supplied to Buildings.*

An apparatus for filtering, humidifying, cooling, or disinfecting air to be supplied to buildings, and consisting in constructing a revolving drum with two or more concentrically-arranged layers of filtering material with a space between each layer, so that all the air drawn or forced through the drum must pass through each layer of filtering material.

23,615 of 1903.—THE FIREPROOF PLATE WALL COMPANY, LTD., and C. H. SIDEBOTHAM: *Construction of Ceilings, and other Structures.*

A building plate or slab constructed with longitudinal flanges a short distance from either end to project between the joists, strengthened by webs running across between flanges, and adapted to be held in position by nails, screws, or pegs driven through the flanges into the sides of the joists, and nails, screws, or pegs driven through the edges of the plate into the face of the joists and grouted solidly to the joists.

24,361 of 1903.—F. E. COOPER: *A Paving Block.*

A wood-paving block, consisting of a plurality of wood slabs, of the width and depth of the block, having a deep, narrow groove along each side, and a dog of thin, flat metal, with spikes or spike portions, the body of the dog lying within said grooves, and the spikes or spike portions being driven into the slabs.

6,919 of 1904.—G. E. TWYNHAM and H. DANIEL: *Apparatus for Collecting and Removing Refuse from Wood Paving, and other Road Surfaces.*

An apparatus for collecting and removing refuse from road surfaces, consisting in the combination of a sludge-removing implement or sucker, a tank or receptacle in connexion with said implement, and arranged upon a vehicle, said tank being arranged to have a vacuum created and maintained therein, a suction pump connected to said tank, and a rotary brush arranged to sweep the mud into the path of the said implement.

7,756 of 1904.—R. BAILEY: *Hods.*

This invention has reference to, and comprising improvements in and relating to hods such as are used by bricklayers, and has for its object to render them stronger and more durable. In carrying into practice the improvements of this invention the ordinary wooden brackets securing the sides of the box to the pole are dispensed with, and steel or iron brackets are used instead. These improved brackets are stamped or embossed out of sheet metal, preferably of mild steel. They are bent to the desired angle to fit the angle of the hod-box and pole, and are formed throughout their length of U or gutter shape, having a flange all round the edge. They are preferably secured to the hod-box and pole by screw nails passing through holes in the flange.

14,222 of 1904.—J. HARRIS: *Method of Directing Daylight into Buildings, and the like.*

For directing daylight by reflection with or without refraction, consisting in the employment of glass prisms or rows of prisms set in planes above, or successively above the planes of prisms in closely adjacent rows.

MEETINGS.

SATURDAY, SEPTEMBER 24.

Incorporated Association of Municipal and County Engineers.—District Meeting at Withington, near Manchester.

WEDNESDAY, SEPTEMBER 28.

Provident Institution of Builders' Foremen and Clerks of Works.—Quarterly meeting of the Directors. 8 p.m.

FRIDAY, SEPTEMBER 30.

Architectural Association.—Annual General Meeting. President's Address and Distribution of Prizes. 7.30 p.m.

SATURDAY, OCTOBER 1.

Incorporated British Institute of Certified Carpenters.—Monthly Meeting at Carpenter's Hall. 6 p.m.

Northern Architectural Association.—Visit to Council Schools, Heaton and St. Gabriels.

TERMS OF SUBSCRIPTION.

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SOME RECENT SALES OF PROPERTY:

ESTATE EXCHANGE REPORT.

Sept. 8.—By BIDWELL & SONS (at Ely).	
Haddenham, Cambs.—Hill Row, a copyhold close, 5 a. 0 r. 0 p.	£165
The Galls, a copyhold field, 16 a. 0 r. 18 p.	250
Gall Fen, various enclosures, 52 a. 2 r. 0 p., f. and c.	1,055
Berry Fen, two copyhold fields, 18 a. 1 r. 10 p.	310
Holme Fen, holding and homestead, 45 a. 0 r. 12 p., f. and c.	400
Holme Fen, various enclosures, 29 a. 3 r. 16 p., c.	585
Sept. 9.—By G. B. HILLIARD & SON (at Chelmsford).	
Danbury, Essex.—"The Priory Farm," 68 a. 0 r. 12 p., f., y.r. 60*l.*	780
Galleywood, Essex.—A freehold shop and house	320
Three freehold cottages	170
Sept. 13.—By F. MILLER & REID.	
Kensington.—5, Kelso-pl. ("Kelso Works"), beneficial lease for 29½ yrs., y.r. 40*l.*	860
By F. VARLEY & SON.	
Stamford Hill.—72, Cranwich-rd., u.t. 79 yrs., g.r. 8*l.*, e.r. 55*l.*	540
Stoke Newington.—35, Queen Elizabeth's-wk., u.t. 71 yrs., g.r. 7*l.* 10s., e.r. 60*l.*	550
By WALFORD & WILSHIN.	
Anerley.—21, Selby-rd., u.t. 61½ yrs., g.r. 10*l.*, e.r. 40*l.*	185
By H. & R. L. COBB (at Rochester).	
Gillingham, Kent.—"Mulberry Tree Farm," 3 a. 3 r. 15 p., f.	1,025
"Mulberry Tree Villa" and 0 a. 0 r. 33 p., f.	335
"Mulberry Tree Cottage" (two) and 0 a. 0 r. 26 p., f.	355
4, Kingswood-rd., f., y.r. 45*l.*	665
42, 44, and 46, Station-rd., f., y.r. 42*l.*	630
Strood, Kent.—2 to 10 (even), Brompton-la., f., w.r. 67*l.* 12s.	600
By J. M. LEEDER & SON (at Swansea).	
Oystermouth, Glamorgan.—West Cross, "Ivy Cottage" and "Ivy Dene," u.t. 39 yrs., g.r. 2*l.*, y.r. 32*l.*	440
West Cross, "Ty Glyn," c., y.r. 60*l.*	1,475
West Cross, "Gly-y-Mor," and 1 a. 3 r. 16 p., c., y.r. 65*l.*	2,000
Clyne Common, c.g. rents 9*l.* 10s., reversion in 65 and 72 yrs.	231
"Gower's Cross Farm," 24 a. 0 r. 11 p., c.	3,190
By JAMES HARRIS & SON (at Alton).	
Empshott, Hants.—"Brunstable Farm," 34 a. 2 r. 24 p., c., y.r. 30*l.*	400
Newton Valance, Hants.—"Lower Noar Hill Farm," 48 a. 1 r. 21 p., c.	650
A copyhold field, 12 a. 1 r. 11 p.	200
Sept. 14.—By B. BAILEY & CO.	
West Ham.—27 to 53 (odd), Kent-st., u.t. 76 yrs., g.r. 44*l.* 2s., w.r. 200*l.* 4s.	745
28 and 30, Melford-rd., u.t. 74 yrs., g.r. 6*l.*, w.r. 31*l.* 4s.	110
By MONEY & JOHNSTON.	
Norwood.—34, Palace-sq., u.t. 79 yrs., g.r. 8*l.* 8s., e.r. 38*l.*	200
By EDMUND SMITH & CO.	
Greenford, Middlesex.—"Knapp's Cottages" (two) and 0 a. 3 r. 5 p., f., y.r. 50*l.*	680
Main-rd., a freehold meadow, 13 a. 2 r. 19 p., y.r. 40*l.* 10s.	1,400
By J. A. TRYTHALL.	
Croydon.—34 and 36, Whitehorse-rd. (s.), u.t. 63¼ yrs., g.r. 12*l.*, e.r. 140*l.*	750
By WYATT & SON (at Chichester).	
Chichester, Sussex.—"Portfield Windmill," with house and shop, f., p.	250
Sept. 15.—By DRIVERS'.	
Stamford Hill.—10, Eastbourne-rd., u.t. 65¼ yrs., g.r. 8*l.* 8s., e.r. 42*l.*	300

Contractions used in these lists.—F.g.r. for freehold ground-rent; l.g.r. for leasehold ground-rent; i.g.r. for improved ground-rent; g.r. for ground-rent; r. for rent; f. for freehold; c. for copyhold; l. for leasehold; p. for possession; e.r. for estimated rental; w.r. for weekly rental; q.r. for quarterly rental; y.r. for yearly rental; u.t. for unexpired term; p.a. for per annum; yrs. for years; la. for lane; st. for street; rd. for road; sq. for square; pl. for place; ter. for terrace; cres. for crescent; av. for avenue; gdns. for gardens; yd. for yard; gr. for grove; b.h. for beerhouse; p.h. for public-house; o. for offices; s. for shops; ct. for court.

PRICES CURRENT OF MATERIALS.

*** Our aim in this list is to give, as far as possible, the *average* prices of materials, not necessarily the lowest. Quality and quantity obviously affect prices—a fact which should be remembered by those who make use of this information.

BRICKS, &c.

	£	s.	d.		
Hard Stocks	1	15	0	per 1000	alongside, in river.
Rough Stocks and Grizzles	1	13	0	"	" "
Facing Stocks	2	12	0	"	" "
Shippers	2	10	0	"	" "
Flettons	1	10	0	"	at railway depôt.
Red Wire Cuts	1	14	0	"	" "
Best Fareham Red	3	12	0	"	" "
Best Red Pressed Ruabon Facing	5	0	0	"	" "
Best Blue Pressed Staffordshire	4	4	0	"	" "
Do. Bullnose	4	10	0	"	" "
Best Stourbridge Fire Bricks	4	8	0	"	" "
GLAZED BRICKS.					
Best White and Ivory Glazed Stretchers	13	0	0	"	" "
Headers	12	0	0	"	" "
Quoins, Bullnose, and Flats	17	0	0	"	" "
Double Stretchers	19	0	0	"	" "
Double Headers	16	0	0	"	" "
One Side and two Ends	19	0	0	"	" "
Two Sides and one End	20	0	0	"	" "
Splays, Chamferred, Squints	20	0	0	"	" "
Best Dipped Salt Glazed Stretchers, and Header	12	0	0	"	" "
Quoins, Bullnose, and Flats	14	0	0	"	" "
Double Stretchers	15	0	0	"	" "
Double Headers	14	0	0	"	" "
One Side and two Ends	15	0	0	"	" "
Two Sides and one End	15	0	0	"	" "
Splays, Chamferred, Squints	14	0	0	"	" "
Second Quality White and Dipped Salt Glazed	2	0	0	"	less than best.

	s.	d.		
Thames and Pit Sand	7	3	per yard,	delivered.
Thames Ballast	6	0	"	"
Best Portland Cement	30	0	per ton,	"
Best Ground Blue Lias Lime	21	0	"	"

NOTE.—The cement or lime is exclusive of the ordinary charge for sacks.

Grey Stone Lime.....12s. 0d. per yard, delivered.
Stourbridge Fireclay in sacks 27s. 6d. per ton at rly. dpt.

STONE.

	s.	d.		
BATH STONE—delivered on road waggons, Paddington Depôt	1	6½	per ft. cube.	
Do. do. delivered on road waggons, Nine Elms Depôt	1	8½	"	"
PORTLAND STONE (20 ft. average)—				
Brown Whitbed, delivered on road waggons, Paddington depôt, Nine Elms depôt, or Pimlico Wharf	2	1	"	"
White Basebed, delivered on road waggons, Paddington depôt, Nine Elms depôt, or Pimlico Wharf	2	2½	"	"

	s.	d.		
Ancaster in blocks	1	11	per ft. cube,	deld. rly. depôt.
Beer "	1	6	"	"
Greenshill "	1	10	"	"
Darley Dale in blocks	2	4	"	"
Red Corsehill "	2	5	"	"
CloseburnRedFreestone	2	0	"	"
Red Mansfield "	2	4	"	"
YORK STONE—*Robin Hood Quality.*				
Scappled random blocks	2	10	"	"
6 in. sawn two sides landings to sizes (under 40 ft. super.)	2	3	per ft. super.	"
6 in. rubbed two sides ditto, ditto	2	6	"	"
3 in. sawn two sides slabs (random sizes)	0	11½	"	"
2 in. to 2½ in. sawn one side slabs (random sizes)	0	7½	"	"
1½ in. to 2 in. ditto, ditto	0	6	"	"
HARD YORK—				
Scappled random blocks	3	0	per ft. cube,	"
6 in. sawn two sides, landings to sizes (under 40 ft. super.)	2	8	per ft. super.	"
6 in. rubbed two sides ditto	3	0	"	"
3 in. sawn two sides (slabs random sizes)	1	2	"	"
2 in. self-faced random flags	0	5	"	"
Hopton Wood (Hard Bed) in blocks	2	3	per ft. cube,	deld. rly. depôt.
" " " 6 in. sawn both sides landings	2	7	per ft. super.	deld. rly. depôt.
" " " 3 in. do.	1	2½	"	"

SLATES.

in.	in.	£	s.	d.		
20 × 10	best blue Bangor	13	2	6	per 1600 of 1200	at r. d.
20 × 12	" "	13	17	6	"	"
20 × 10	first quality "	13	0	0	"	"
20 × 12	" " "	13	15	0	"	"
16 × 8	" " "	7	5	0	"	"

SLATES (*continued*).

in.	in.		£	s.	d.	
20 × 10	best blue Portmadoc	.....	12	12	6	per 1000 of 1200 at r. d.
16 × 8	,,	,,	6	12	6	,, ,,
20 × 10	best Eureka unfading green	.	15	17	6	,, ,,
20 × 12	,,	,,	18	7	6	,, ,,
18 × 10	,,	,,	13	5	0	,, ,,
16 × 8	,,	,,	10	5	0	,, ,,
20 × 10	permanent green		11	12	6	,, ,,
18 × 10	,,	,,	9	12	6	,, ,,
16 × 8	,,	,,	6	12	6	,, ,,

TILES.

	s.	d.	
Best plain red roofing tiles .	42	0	per 1000 at rly. depôt.
Hip and Valley tiles ...	3	7	per doz. ,, ,,
Best Brosely tiles.....	50	0	per 1000 ,, ,,
Do. Ornamental tiles	52	6	,, ,, ,,
Hip and Valley tiles ...	4	0	per doz. ,, ,,
Best Ruabon red, brown, or brindled do. (Edwards)	57	6	per 1000 ,, ,,
Do. Ornamental do	60	0	,, ,, ,,
Hip tiles	4	0	per doz. ,, ,,
Valley tiles	3	0	,, ,, ,,
Best Red or Mottled Staffordshire do. (Peakes).....	51	9	per 1000 ,, ,,
Do. Ornamental do.....	54	6	,, ,, ,,
Hip tiles	4	1	per doz. ,, ,,
Valley tiles	3	8	,, ,, ,,
Best "Rosemary" brand plain tiles.....	48	0	per 1000 ,, ,,
Best Ornamental tiles	50	0	,, ,, ,,
Hip tiles	4	0	per doz. ,, ,,
Valley tiles	3	8	,, ,, ,,
Best "Hartshill" brand plain tiles, sand faced.	50	0	per 1000 ,, ,,
Do. pressed.....	47	6	,, ,, ,,
Do. Ornamental do	50	0	,, ,, ,,
Hip tiles	4	0	per doz. ,, ,,
Valley tiles	3	6	,, ,, ,,

WOOD. At per standard.

	£	s.	d.	£	s.	d.
Deals: best 3 in. by 11 in. and 4 in. by 9 in. and 11 in	15	10	0	16	10	0
Deals: best 3 by 4.....	14	10	0	15	10	0
Battens: best 2½ in. by 7 in. and 8 in., and 3 in. by 7 in. and 8 in.	11	10	0	12	10	0
Battens: best 2½ by 6 and 3 by 6 ..	0	10	0	less than 7 in. and 8 in.		
Deals: seconds	1	0	0	less thn best		
Battens: seconds	0	10	0	,, ,, ,,		
2 in. by 4 in. and 2 in. by 6 in....	9	0	0	9	10	0
2 in. by 4½ in. and 2 in. by 5 in....	8	10	0	9	10	0
Foreign Sawn Boards— 1 in. and 1¼ in. by 7 in.	0	10	0	more than battens.		
¾ in.	1	0	0	,,		

At per load of 50 ft.

Fir timber: best middling Danzig or Memel (average specification)	4	10	0	5	0	0
Seconds	4	5	0	4	10	0
Small timber (8 in. to 10 in.) ...	3	12	6	3	15	0
Small timber (6 in. to 8 in.)	3	0	0	3	10	0
Swedish balks	2	15	0	3	0	0
Pitch-pine timber (30 ft. average)	3	5	0	3	15	0

JOINERS' WOOD. At per standard.

White Sea: first yellow deals, 3 in. by 11 in	23	0	0	24	0	0
3 in. by 9 in.	21	0	0	22	10	0
Battens, 2½ in. and 3 in. by 7 in.	17	0	0	18	10	0
Second yellow deals, 3 in. by 11 in.....	18	10	0	20	0	0
,, ,, 3 in. by 9 in.	17	10	0	19	0	0
Battens, 2½ in. and 3 in. by 7 in.	13	10	0	14	10	0
Third yellow deals, 3 in. by 11 in. and 9 in.	15	10	0	16	10	0
Battens, 2½ in. and 3 in. by 7 in.	11	10	0	12	10	0
Petersburg: first yellow deals, 3 in. by 11 in.	21	0	0	22	10	0
Do. 3 in. by 9 in.....	18	0	0	19	10	0
Battens.....	13	10	0	15	0	0
Second yellow deals, 3 in. by 11 in.	16	0	0	17	0	0
Do. 3 in. by 9 in.....	14	10	0	16	0	0
Battens.....	11	0	0	12	10	0
Third yellow deals, 3 in. by 11 in.	13	10	0	14	0	0
Do. 3 in. by 9 in.....	13	0	0	14	0	0
Battens.....	10	0	0	11	0	0
White Sea and Petersburg :—						
First white deals, 3 in. by 11 in.	14	10	0	15	10	0
,, ,, 3 in. by 9 in.	13	10	0	14	10	0
Battens	11	0	0	12	0	0
Second white deals, 3 in. by 11 in.	13	10	0	14	10	0
,, ,, 3 in. by 9 in.	12	10	0	13	10	0
,, ,, battens	9	10	0	10	10	0
Pitch-pine: deals.....	16	10	0	20	0	0
Under 2 in. thick extra	0	10	0	1	0	0
Yellow Pine—First, regular sizes	40	0	0	upwards.		
Oddments	28	0	0	,,		
Seconds, regular sizes.....	30	0	0	,,		
Yellow Pine oddments	25	0	0	,,		
Kauri Pine—Planks, per ft. cube .	0	3	6	0	5	0
Danzig and Stettin Oak Logs— Large, per ft. cube	0	2	6	0	3	6
Small ,, ,, ...	0	2	3	0	2	6
Wainscot Oak Logs, per ft. cube.	0	5	0	0	5	6
Dry Wainscot Oak, per ft. sup. as inch	0	0	8	0	0	9
¾ in. do. do.	0	0	7	—		
Dry Mahogany—Honduras, Tabasco, per ft. super. as inch ...	0	0	9	0	1	0
Selected, Figury, per ft. sup. as inch	0	1	6	0	2	6
Dry Walnut, American, per ft. sup. as inch	0	0	10	0	1	0
Teak, per load	17	0	0	21	0	0
American Whitewood Planks, per ft. cube.....	0	4	0	—		

Prepared Flooring— Per square.

1 in. by 7 in. yellow, planed and shot	0	13	6	0	17	6
1 in. by 7 in. yellow, planed and matched	0	14	0	0	18	0
1¼ in. by 7 in. yellow, planed and matched	0	16	0	1	0	0
1 in. by 7 in. white, planed and shot	0	12	0	0	14	6
1 in. by 7 in. white, planed and matched	0	12	6	0	15	0

WOOD (*continued*). Per square.

	£	s.	d.	£	s.	d.
1¼ in. by 7 in. white, planed and matched	0	15	0	0	16	6
¾ in. by 7 in. yellow, matched and beaded or V-jointed brds.	0	11	0	0	13	6
1 in. by 7 in. do. do.	0	14	0	0	18	0
¾ in. by 7 in. white do. do.	0	10	0	0	11	6
1 in. by 7 in. do. do. do.	0	11	6	0	13	6

6 in. at 6d. to 9d. per square less than 7 in.

JOISTS, GIRDERS, &c.

	In London, £	s.	d.	Delivered Railway Vans, £	s.	d.
Rolled Steel Joists, ordinary sections	6	5	0	7	5	0
Compound Girders, ordinary sections	8	2	6	9	5	0
Angles, Tees and Channels, ordinary sections	7	17	6	8	17	0
Flitch Plates	8	5	0	8	15	0
Cast Iron Columns and Stanchions including ordinary patterns	7	2	6	8	5	0

METALS.

	Per ton, in London. £	s.	d.	£	s.	d.
IRON—						
Common Bars	7	5	0	7	15	0
Staffordshire Crown Bars, good merchant quality..... ..	7	15	0	8	5	0
Staffordshire "Marked Bars"	10	0	0	—		
Mild Steel Bars.....	8	15	0	9	5	0
Hoop Iron, basis price	9	5	0	9	10	0
,, ,, Galvanized	17	10	0	—		
(*And upwards, according to size and gauge.)						
Sheet Iron, Black—						
Ordinary sizes to 20 g.	9	15	0	—		
,, ,, 24 g.	10	15	0	—		
,, ,, 26 g.	12	5	0	—		
Sheet Iron, Galvanised, flat, ordinary quality—						
Ordinary sizes—6 ft. by 2 ft. to 3 ft. to 20 g.....	12	15	0	—		
Ordinary sizes to 22 g. and 24 g.	13	5	0	—		
,, ,, 26 g.	14	5	0	—		
Sheet Iron, Galvanised, flat, best quality—						
Ordinary sizes to 20 g.	16	0	0	—		
,, ,, 22 g. and 24 g.	16	10	0	—		
,, ,, 26 g.	18	0	0	—		
Galvanised Corrugated Sheets—						
Ordinary sizes 6 ft. to 8 ft. 20 g.	12	10	0	—		
,, ,, 22 g. and 24 g.	13	0	0	—		
,, ,, 26 g.	13	15	0	—		
Best Soft Steel Sheets, 6 ft. by 2 ft. to 3 ft. by 20 g. and thicker	11	15	0	—		
Best Soft Steel Sheets, 22 g. & 24 g.	12	15	0	—		
,, ,, 26 g.....	14	0	0	—		
Cut nails, 3 in. to 6 in.....	9	0	0	9	10	0
(Under 3 in., usual trade extras.)						

LEAD, &c.

	Per ton, in London. £	s.	d.	£	s.	d.
LEAD—Sheet, English, 3lb. and up	14	10	0	—		
Pipe in coils	15	0	0	—		
Soil pipe	17	10	0	—		
Compo pipe.....	17	10	0	—		
ZINC—Sheet—						
Vieille Montagne .....ton	27	10	0	—		
Silesian.....	27	5	0	—		
COPPER—						
Strong Sheet.....per lb.	0	0	10	—		
Thin ,, ... ,,	0	0	11	—		
Copper nails ..... ,,	0	0	10	—		
BRASS—						
Strong Sheet..... ,,	0	0	9½	—		
Thin ,, ... ,,	0	0	10	—		
TIN—English Ingots ..... ,,	0	1	3½	—		
SOLDER—Plumbers' ..... ,,	0	0	6½	—		
Tinmen's..... ,,	0	0	8	—		
Blowpipe..... ,,	0	0	9	—		

ENGLISH SHEET GLASS IN CRATES.

15 oz. thirds	2½d.	per ft. delivered.
,, fourths.....	1¾d.	,, ,,
21 oz. thirds	3¼d.	,, ,,
,, fourths.....	2¾d.	,, ,,
26 oz. thirds	4¼d.	,, ,,
,, fourths.....	3¼d.	,, ,,
32 oz. thirds	5¼d.	,, ,,
,, fourths.....	4¼d.	,, ,,
Fluted Sheet, 15 oz.....	3¼d.	,, ,,
,, 21 oz.....	4¼d.	,, ,,
⅛ Hartley's Rolled Plate	1¾d.	,, ,,
⅛ ,, ,, ,, ...	2d.	,, ,,
¼ ,, ,, ,, ...	2¼d.	,, ,,

OILS, &c.

		£	s.	d.
Raw Linseed Oil in pipes	per gallon	0	1	7
,, ,, ,, in barrels	,,	0	1	8
,, ,, ,, in drums.....	,,	0	1	10
Boiled ,, ,, in pipes	,,	0	1	9
,, ,, ,, in barrels	,,	0	1	10
,, ,, ,, in drums.....	,,	0	2	0
Turpentine, in barrels	,,	0	3	4
,, in drums.....	,,	0	3	6
Genuine Ground English White Lead	per ton	18	15	0
Red Lead, Dry	,,	18	10	0
Best Linseed Oil Putty	per cwt.	0	6	6
Stockholm Tar	per barrel	1	12	0

VARNISHES, &c. Per gallon.

	£	s.	d.
Fine Pale Oak Varnish	0	8	0
Pale Copal Oak	0	10	6
Superfine Pale Elastic Oak	0	12	6
Fine Extra Hard Church Oak.....	0	10	0
Superfine Hard-drying Oak, for seats of Churches	0	14	0
Fine Elastic Carriage.....	0	12	6
Superfine Pale Elastic Carriage	0	16	0
Fine Pale Maple	0	16	0
Finest Pale Durable Copal	0	18	0
Extra Pale French Oil	1	1	0
Eggshell Flatting Varnish	0	18	0
White Copal Enamel	1	4	0
Extra Pale Paper	0	12	0
Best Japan Gold Size	0	10	6
Best Black Japan.....	0	16	0
Oak and Mahogany Stain	0	9	0
Brunswick Black	0	8	6
Berlin Black	0	16	0
Knotting	0	10	0
French and Brush Polish	0	10	0

TO CORRESPONDENTS.

NOTE.—The responsibility of signed articles, letters, and papers read at meetings rests, of course, with the authors.

We cannot undertake to return rejected communications; and the Editor cannot be responsible for drawings, manuscripts, or other documents, sent to or left at this office, unless he has specially asked for them.

Letters or communications (beyond mere news items) which have been duplicated for other journals are NOT DESIRED.

All communications must be authenticated by the name and address of the sender, whether for publication or not. No notice can be taken of anonymous communications.

We are compelled to decline pointing out books and giving addresses.

Any commission to a contributor to write an article, or to execute or lend a drawing for publication, is given subject to the approval of the article or drawing, when received, by the Editor, who retains the right to reject it if unsatisfactory. The receipt by the author of a proof of an article in type does not necessarily imply its acceptance.

All communications regarding literary and artistic matters should be addressed to THE EDITOR; those relating to advertisements and other exclusively business matters should be addressed to THE PUBLISHER, and not to the Editor.

TENDERS.

Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than* 10 *a.m. on Thursdays.* [N.B.—We cannot publish Tenders unless authenticated either by the architect or the building-owner; and we cannot publish announcements of Tenders accepted unless the amount of the Tender is stated, nor any list in which the lowest Tender is under 100*l.*, unless in some exceptional cases and for special reasons.]

* Denotes *accepted.* † Denotes *provisionally accepted.*

BELFAST.—For erecting a Presbyterian church in Ravenhill-road. Mr. T. Houston, architect and engineer, Kingscourt, Wellington-place, Belfast. Quantities by Mr. S. C. Hunter, Scottish Provident-buildings, Belfast:—

Lowry & Percy	£5,495	0	0
W. Kerr	5,489	0	0
J. Lees	4,975	0	0
Oliver & Co.	4,925	0	0
K. G. Walker	4,893	0	0
Courtney & Co.	4,880	0	0
W. Dowling	4,847	15	6
McDowell, Leathem, & Fraser	4,778	17	0
McIntyre Bros.	£4,769	0	0
J. E. Smith..	4,700	0	0
H. Keith	4,695	0	0
W. J. Campbell & Son	4,575	0	0
Thornbury Bros.	4,239	0	0
R. Corry, Ltd., University-street*	4,096	0	0

BERKHAMSTED.—For a house, for Mr. E. Collings. Messrs. C. H. & N. A. Rew, architects, 185, High-street, Berkhamsted:—

G. Whitman	£825		
H. Fincher	779		
R. Jones & Sons....	739		
H. & J. Matthews ..	707		
Nash, Young, & Horne	£697		
J. Honour & Son	697		

The last two tendering again for certain deductions resulted:—

Nash, Young, & Horne, Berkhamsted* .. £650
J. Honour & Son 642

BERKHAMSTED.—For painting the exterior and pointing the walls, etc., of workhouse and other buildings, for the Guardians. Messrs. C. H. & N. A. Rew, architects. Berkhamsted:—

T. Jones	£156	0	
W. Elphick	116	0	
G. W. Johnson ..	105	0	
J. J. Richards ..	96	0	
R. Jones & Son ..	£89	0	
Wontner & Co. ..	73	0	
G. Ellis	64	10	
F. Austin*	56	5	

BURNHAM ULPH (Norfolk).—For works of restoration at Burnham Ulph Church. Mr. Arthur J. Lacey, architect, 6, Upper King-street, Norwich:—

R. Shanks	£98	0	0
H.H. Moorhouse	75	0	0
T. Hinson	53	3	6
Bardell Bros...	£51	10	0
R. Dye, King's Lynn*	44	0	0

CARDIFF.—For erection of stabling, etc., in Tradelane, for Messrs. Sessions & Sons, Ltd. Mr. E. G. C. Down, architect and surveyor, 31, High-street, Cardiff. Quantities by architect:—

Blacker Bros..	£320	0	0
E. Turner & Sons	312	0	0
G. Beames ..	299	10	0
W. Symonds & Co.....	294	0	0
H. W. North..	281	7	7
F. Ashley....	£281	0	5
D. Davies....	278	0	0
J. Allan & Sons	277	13	8
Knox & Wells	276	0	0
G. Beard, Cardiff*	240	15	10

CARSHALTON.—For making up Gordon-road, for the Urban District Council. Mr. W. Willis Gale, Surveyor, A.M.I.C.E. Quantities by Surveyor:—

F. Hoffmann ..	£4,374	18	3
London & County Builders..	3,400	9	10¼
A.B. Champniss	2,494	15	0
A. C. Soan	2,369	12	5
Harvey Bros.....	2,294	15	4
E. Iles	£2,217	17	3
T. Adams ..	2,173	11	4
J. C. Trueman	2,159	0	0
T. Free & Son	2,055	2	2
A. T. Catley	1,990	0	0
J. B. Potter, Sutton, Surrey* ..	1,935	13	0

DENTON.—For sewering, paving and flagging, etc., Law-street and Ashworth-street, for the Urban District Council. Mr. G. H. Newton, Surveyor, Town Hall, Denton:—

P. D. Hayes, 35, Old-road, Heaton Norris, Stockport .. } Schedule of prices.

TENDERS—*Continued on page* 327

COMPETITIONS, CONTRACTS, AND PUBLIC APPOINTMENTS.

(For some Contracts, &c., still open, but not included in this List, see previous issues.)

COMPETITION.

Nature of Work.	By whom Required.	Premiums.	Designs to be Delivered
*External Treatment of Building for Tropical Climate	Sandars & Harding	50*l.*	Dec. 31

CONTRACTS.

Nature of Work or Materials.	By whom Advertised.	Forms of Tenders, etc., supplied by	Tenders to be Delivered
Gen. Repairs, Painting, etc., of Tara Hall, Co. Meath	.....	J. F. McGahon, Architect, 3, Earl-street, Dundalk	Sept. 26
Renovation, Repairs, etc., of Outbuildings, Co. Meath	.....	do.	do.
Wood Paling and Shed with Corrugated Iron Roof..	Warrington Electricity Committee	F. V. L. Mathias, Engineer, Electricity Works, Howley	do.
Erection of Cloakroom at Booth Town Council School	Halifax Education Committee	Borough Engineer, Town Hall, Halifax	do.
Limestone Tar-paving	Broadstairs and St. Peters U.D.C.	Town Surveyor, Broadstairs	do.
Reconstruction of Bridge, Christchurch.....	Southampton County Council	County Surveyor, The Castle, Winchester	do.
Extension and Addition of Swimming Bath to Baths	Altrincham U.D.C.	Council Offices, Town Hall, Altrincham	do.
Steam Rolling and Repairing Main Road	Abbeyleix R.D.C.....	Clerk's Office, Workhouse, Abbeyleix	do.
Portland Cement	Cowes U.D.C...	Council's Engineer, Cowes, Isle of Wight.....	do.
Making-up Roads	Ilford U.D.C.....	H. Shaw, Engineer, Town Hall, Ilford	do.
Steel-Rolled Joist Gearing	River Ware Commissioners.....	H. H. Wake, Engineer, Commissioners' Quay, Sunderland	do.
Sewering, Roadmaking, and Paving Works.....	Manchester Corporation	Paving, etc., Department, Town Hall, Manchester	do.
Levelling, Paving, Flagging, etc., of Streets.....	Morley Highways Committee.....	Borough Engineer, Town Hall, Morley.....	do.
Rebuilding "Boot Inn," Dinas	Pentre Brewery Co., Ltd.	A. O. Evans, Architect, Pontypridd	do.
Erection of Verandah in the Market Hall.....	Halifax Corporation.....	Borough Engineer, Town Hall, Halifax	Sept. 27
Transporting Bricks	Leeds Waterworks Committee	City Engineer, Leeds	do.
Wood Paving Works	Edmonton U.D.C.	Council's Engineer, Town Hall, Lower Edmonton.....	do.
Corrugated Iron Building at Waterworks Reservoir	Bedford Borough Council	Borough Engineer Town Hall, Bedford	do.
Wiring for Electric Lighting	Barnes U.D.C.	Council Offices, High-street, Mortlake, S.W.	do.
Supply of Setts	Gillingham (Kent) Corporation	Clerk, Corporation Offices, Gillingham, Kent	do.
Making-up Roads	Tottenham U.D.C.	Council's Engineer, 712, High-road, Tottenham	do.
Rails & Fishplates, Spikes (Dog), Elec. & h.p. Cranes	Secretary of State for India	Director-General of Stores, India Office, Whitehall, S.W.....	do.
Materials for Steel Foundry, and Tools and Stores	Bombay, Baroda, etc., Railway Co.	Company's Offices, Gloucester House, Bishopsgate Without, E.C.	do.
Shops and Houses, Hengoed.....	Sunnybank Cottage Co., Ltd.	G. A. Treharne, Architect, 18, Canon-street, Aberdare	do.
Erection of Co-operative Stores, Blaengwynfi	The Trustees	D. Evans, Architect, 40, Villiers-road, Blaengwynfi	do.
Supply of Stores for Gas Department	Glasgow Corporation	A. Wilson, Engineer, 45, John-street, Glasgow	do.
Team Labour	Sowerby Bridge U.D.C.	Surveyor, Council Offices, Sowerby Bridge	Sept. 28
Fixing Ventilators, Alters. to Offices, etc., at Schools	Middleton Cheney Schools	W. J. Treadwell, Surveyor, Middleton Cheney	do.
55 Houses and Road Formation, Rhondda Valley ..	Hendrewen Building Club	W. D. Morgan, Architect, Pentre, Glam.	do.
Municipal Buildings	Leigh (Lancs.) Corporation.....	J. C. Prestwich, Architect, Leigh	do.
Public Baths	Moss Side U.D.C.....	Council's Engineer, Moss Side.....	do.
Granite Spalls.....	West Ham Union.....	Clerk, Union Workhouse, Leytonstone, N.E.	do.
Making-up Mews.....	Wood Green U.D.C.....	Council's Surveyor, Town Hall, Wood Green	do.
Supply of Goods and Materials	Atherton U.D.C.	Council's Surveyor, Town Hall, Atherton.....	do.
Sewage Disposal Works	Wincanton R.D.C.	Council's Engineer, 28, Baldwin-street, Bristol	do.
Gasholder Tank and Buildings for a Gasworks, Herts.	First Garden City, Ltd.	C. Hunt, Engineer, 15, Victoria-street, S.W.	Sept. 29
Area for Boiler Clinker Storage at Infirmary	Southwark Guardians	G. D. Stevenson, Architect, 13 and 14, King-street, E.C.	do.
Branch Drainage, San. Work, & Fittings, Infirmary	do.	do.	do.
Alterations to Park Cottage, Lanfrechfa, nr. Caerleon	F. J. Mitchell, Esq., J.P.	W. H. D. Caple, Architect, Church-street-chambers, Cardiff	do.
Alterations to Lanfrechfa National School, Mon. ..	The Managers	do.	do.
Erection of Labourers' Cottages	Antrim R.D.C.	J. Clark, Union Office, Antrim	do.
Conver. of Four Houses into Shop & House, Halifax	.....	Jackson & Fox, Architects, 7, Rawson-street, Halifax	Sept. 30
Painting Public Works	Brighton Borough Council	Borough Engineer, Town Hall, Brighton	do.
Supply of Granite and Dross	Southowram U.D.C.....	R. W. Evans, Commercial Bank-chambers, Halifax	do.
*New Coastguard Buildings at Polruan, near Fowey..	Admiralty	Superintending Civil Engineer, H.M. Dockyard, Devonport	do.
New Classrooms and Alters. to Schools, Byfleet, Surrey	The Management Committee	The Schools, Byfleet, Surrey	Oct. 1
Broken Granite and Chippings	Lymington Town Council	Borough Surveyor, Lymington, Hants	do.
Turntable at Car Works	Manchester Corporation Tramways	J. M. McElroy, 58, Piccadilly, Manchester	do.
Reroofing Machine House, Cardiff	T. Owen and Co., Ltd.	J. W. Rodger, Architect, 14, High-street, Cardiff	do.
*Erection of School Buildings	Walthamstow U.D.C.	H. Prosser, Architect, Education Offices, Walthamstow	do.
Steam Road Roller and Scarifier.....	Paddington Borough Council.....	.....	Oct. 3
*Erection of Car Sheds, Workshops, and Offices	Erith U.D.C.....	W. Egerton, 12, Queen's-road, Erith	do.
Broken Granite	Guildford Town Council	Borough Surveyor, Tuns Gate, Guildford	do.
Twelve Cottages, Napsbury Asylum	Middlesex County Council	W. G. Austin, Guildhall, Westminster, S.W.	do.
5,000 Tons of Earth or Filling to Beach	Felixstowe and Walton U.D.C.	Clerk's Office, Town Hall, Felixstowe	do.
Houses at Drogheda, Rockcorry, Portadown, etc. ..	G.N. Railway Co. (Ireland)	Engineer-in-Chief, Amiens-street Terminus, Dublin	do.
Road-making and Paving Works	Lewisham Borough Council	Council's Surveyor, Town Hall, Catford, S.E.	do.
Cast-Iron Pipes	Skipton U.D.C.....	G. H. Hill & Son, 3, Victoria-street, S.W.	do.
Supply of Stores.....	Lancashire and Yorkshire Railway	Duffin, Stores Department, Osborne-street, Manchester	do.
*Completion of Six Villas, Westbury-avenue, N.	.....	Frith Garland & Co., 70, Grand-parade, Harringay, N.	do.
*Erection of Public Offices	Friern Barnet U.D.C.	E. J. Reynolds, A.M.I.C.E., Beaconsfield-road, Friern Barnet, N.	do.
Erection of Six Cottages, Perranporth, etc., Cornwall	G.W. Railway Co.	Company's Engineer, Plymouth (North-road) Station	Oct. 4
Supply of Timber	do.	Secretary, Paddington Station, W.	do.
Police Station and Residence, Wincobank, Sheffield	Sheffield Watch Committee	City Surveyor, Town Hall, Sheffield	do.
Private Street Works, Kathleen-street, Goldthorpe	Bolton-on-Dearne U.D.C.	Council's Surveyor, Bolton-on-Dearne, Rotherham.....	do.
Private Street Works, Nora-street, Goldthorpe	do.	do.	do.
Council's Offices and Library	do.	do.	do.
*Forming Roadway and Retaining Wall, Kew Bridge	Brentford U.D.C.....	Council's Engineer, Clifden House, Boston-road, Brentford	do.
*Erection of Workmen's Dwellings	Barking Town U.D.C.	C. J. Dawson, Architect, East-street, Barking	do.
Public Library Building	Poplar Borough Council	J. R. Hunt & Co., 181, Queen Victoria-street E.C.	Oct. 5
Alterations, etc., St. James'-road School	Wandsworth Guardians	C. A. Sharp, Architect, 11, Old Queen-street, S.W.	do.
Pumping Machinery and Electric Motors	Richmond Main Sewerage Board ..	W. Fairley, West Hall-road, Kew Gardens	do.
New Road and Drains, Pontlottyn, Glam.....	.....	Gustard & Waddington, Bridge-street, Newport, Mon	do.
*Painting, etc., Workhouse Infirmary	St. Leonard, Shoreditch, Guardians	F. J. Smith, Architect, Parliament Mansions, Victoria-street, S.W.	do.
*Twenty Semi-detached Villas	Trustees of the Coedsaeson Bldg. Club	W. Nichols, Fairholm, Sketty	do.
Sewering, Road-making, etc.	Croydon R.D.C.	Council's Surveyor, Town Hall, Croydon	Oct. 6
Disinfecting Station, etc., Tooting	Wandsworth Borough Council	Council's Surveyor, 215, Balham High-road, S.W.....	do.
Cast-Iron Flange Pipes and Special Castings	Hull Corporation	F. J. Bancroft, Alfred Gilder-street, Hull	Oct. 7
Granite Kerb, Channel and Granite Spalls	Brighton Borough Council	Borough Engineer, Town Hall, Brighton	do.
*Erection of Sixteen Workmen's Dwellings	Borough of Southwold.....	Ernest R. Cooper, 1, Market-place, Southwold	do.
Car Shed for Electric Tramways	Exeter Corporation	City Engineer, 7, Southernhay West, Exeter	Oct. 8
Extension of Blawarthill Hospital	Renfrew and Clydebank Jt. Hos. Bd.	Stewart & Paterson, 14, Blythswood-square, Glasgow	do.
*Supply of General Stores	Metropolitan Railway Co.	R. H. Selbie, 32, Westbourne-terrace, W.	do.
Sewage Disposal Works.....	Todmorden Corporation	Borough Engineer, Town Hall, Todmorden.....	Oct. 10
Retain. & Fence Walls, & Widening Carriageways, etc.	Pontypridd U.D.C.	Council's Engineer, Pontypridd	do.
Steam Motor Waggons and Special Equipment	do.	do.	do.
Sewage Disposal Works.....	Ludlow Town Council	Town Clerk, Ludlow.....	do.
Construction of Railway	Dearne Valley Railway Co.	S. R. Kay, 1, Albion-place, Leeds.....	do.
Dry-Back Marine Type Boiler.....	Ipswich Corporation	T. Ayton, Constantine-road, Ipswich	do.
*Public Library	Malvern U.D.C.....	Clerk, Council Offices, Malvern	do.
*Sewering and Road-making	Hanwell U.D.C.	S. W. Barnes, Church-road West, Hanwell, W.	do.
Sewers and Disposal Works	Church Stretton U.D.C.	J. Mansergh & Sons, 5, Victoria-street, S W.	Oct. 11
Drainage Work at Sewage Farm.....	Oakengates U.D.C.	R. E. W. Berrington, Bank-buildings, Wolverhampton	do.

CONTRACTS.—*Continued.*

Nature of Work or Materials.	By whom Advertised.	Forms of Tender, etc., supplied by	Tenders to be delivered
Steam Exhaust Pipes, Supports, Valves, etc.	L.C.C.	County Hall, Spring-gardens, S.W.	Oct. 11
Locomotive Engines and Tenders	Southern Mahratta Rail. Co., Ltd.	Company's Offices, 46, Queen Anne's-gate, S.W.	do.
*Erection of Front Block, Northern Dist. P.O.	Commissioners of H.M. Works, etc.	J. Wager, Office of Works, Storey's Gate, S.W.	do.
*Construction of Light Railways	County Council of Middlesex	H. T Wakelam, M.Inst.C.E., Guildhall, Westminster, S.W.	Oct. 12
Extension of Lerwick Harbour	Lerwick Harbour Trustees	J. Barron, 216, Union-street, Aberdeen	do.
*New Coastguard Buildings, Osmington, nr. Weymouth	Admiralty	Directors of Works Department, 21, Northumberland-ave., W.C.	Oct. 14
*Additions to Stores Department	Poplar & Stepney Sick Asylum Dist.	J. & W. Clarkson, 136, High-street, Poplar, E.	Oct. 18
Free Library Buildings	Salisbury Free Library Committee	A. C. Bothums, Architect, 32, Chipper-lane, Salisbury	No date
Corrugated Iron Room	.....	R L. Hidderley, Chester-road, Macclesfield	do.
Hard Blast Furnace Clinker (Broken) for Filter. Mat.	.....	Macdonald, Contractor, Talgarth, near Brecon	do.
Rebldg. of Cairn-man-Arran Farmhse., nr. Chepstow	.....	J. Richards, Castle View, Caerphilly	do.
Rebuilding 38, High-street, Lincoln	St. Botolph Church Trustees	W. Watkins & Son, Architects, Lincoln	do.
C.-I. Water Tank, Pump, C.-I. Flange, Pipe Valves, etc.	Limerick E.L. Committee	Town Clerk, Limerick	do.
Extension of Electric Lighting Station	Watford U.D.C.	C. P. Ayres, Architect, Watford	do.
Boarding-house and Shop, Grassington	.....	J. Hartley, Architect, Skipton	do.

PUBLIC APPOINTMENTS.

Nature of Appointment.	By whom Advertised.	Salary.	Applications to be in
Sanitary Inspector	Southwark Borough Council	120*l.*	Sept. 26
Road Foreman	Ilford U.D.C.	3*l.* 3s. per week	do.
*Clerk of Works	Tottenham Education Committee	3*l.* 3s. per week	Sept. 30
*Clerk of Works	Enfield Education Committee	3*l.* 3s.	Oct. 3
*Assis. Instructor in Man. Training & Carp. & Joinery	Battersea Polytechnic	120*l.*	No date.

Those marked with an asterisk (*) are advertised in this Number. *Competitions*, iv. *Contracts*, iv. vi. viii. x. *Public Appointments*, xix.

TENDERS.—*Continued from page* 325.

DRAYCOTT.—For completion of Council schools (twenty-two Tenders received, and reduced to the five following). Mr. F. S. Antliff, architect, Draycott. Quantities by the architect :—

F. Perks & Son	£3,295 0	J. & J. Warner	£3,165 3
W. Maule & Co.	3,230 0	J. Brown & Son,	
A. Brown & Son	3,178 0	Long Eaton‡	3,157 0

‡ Recommended by the Draycott Managers for acceptance by the Derbyshire County Council.

DURHAM.—For sewerage works at Sherburn Colliery station, for the Rural District Council. Mr. G. Gregson, Surveyor, 38, Saddler-street, Durham :—

Sherburn Colliery Station Sewer.

G. T. Manners	£189 0 0	J. Carrick	£131 2 8
J. T. Short	152 17 2	J. G. Bradley,	
R. Oliver	139 9 9	Durham*	110 0 0

Croxdale Sewer.

G. T. Manners	£159 0 0	J. G. Bradley	£92 11 8
J. T. Short	98 9 6	R. Oliver, Gilesgate Moor*	89 13 9
J. Carrick	98 1 8		

EASINGWOLD (Yorks.).—For sewerage works, for the Rural District Council. Messrs. Fairbank & Son, engineers, Lendal-chambers, York :—

Wood & Sons, Stillington, Easingwold* £113 2 9

EAST GREENWICH.—For building a police-station. Mr. J. Dixon Butler, Surveyor to the Metropolitan Police, New Scotland Yard, architect. Quantities by Messrs. Thurgood, Son, & Chidgey, Charing Cross-chambers, Duke-street, Adelphi :—

Graham & Sons	£10,816	Grover & Sons	£10,279
Clarke & Bracey	10,622	Higgs & Hill	9,984
H. J. Williams	10,560	Lathey Bros.	9,977
Chessum & Sons	10,483	J. T. Messom	9,975
Lascelles & Co.	10,418	Lawrance & Sons	9,966
Holloway Bros.	10,385	Willmott & Sons	9,784
H. Lovatt	10,299	C. Ansell*	9,708

EDEN (near Carrickfergus).—For sewerage works, for the Larne Rural District Council. Mr. J. W. Whiteford, engineer, 28, Waring-street, Belfast :—

G. Gregg	£531 6 0	H. A. Alexander, Belfast*	£358 12 0
M. Green	484 12 7	P. Clarke & Son	320 0 0
J. Robinson	437 6 0	J. Ross & Son	291 7 3
W. Geddes	435 0 0		
W. Agnew	406 14 0		

ERITH (Kent).—For street works in part of Crabtree Manor-way, Belvedere, for the Urban District Council. Mr. Harold Hind, Surveyor, Erith :—

G. Rackham	£480 13 3	S. J. Brice & Sons	£345 16 8
A. B. Champniss	448 10 0	Road Maintenance & Stone Supply Co., Ltd., Gravesend*	306 1 10
T. Adams	442 5 0		
W. H. Wheeler	367 7 7		
T. Free & Sons	355 4 3		

HANWELL.—For sewage disposal works. Mr. S. W. Barnes, Surveyor, Council Offices, Hanwell :—

Clift Ind	£3,686 0 0	Ross & Crabtree	£2,736 7 0
W. H. Wheeler	3,361 0 10	A. B. Champniss	2,724 11 5
Muirhead, Greig, & Matthews	3,252 15 2	A. & B. Hanson	2,629 0 0
J. Macklin	2,997 0 0	Johnson & Langley	2,600 13 4
W. Neave & Son	2,960 0 0	G. Bell, Tottenham*	2,353 19 6
J. & T. Binns	2,937 3 8		
G. Wimpey & Co.	2,913 5 4		

HANWELL. — For the supply of hand-broken granite up to March 31, 1905, for the Urban District Council :—

	Amount per yard cube. 1½-in.		2-in.
Guernsey Granite.	s. d.		s. d.
Fry Bros.*	17 3	..	16 9
S. Trickett, jun.	17 0	..	16 6
L. Sommerfeld	17 6	..	17 0
J. Mowlem & Co., Ltd.	17 7	..	17 1
W. Griffiths & Co., Ltd.	18 4	..	17 10
G. A. Watson & Co., Ltd.	19 10	..	19 1
Clee Hill Granite.			
S. Trickett, jun.	17 8	..	17 2
Clee Hill Stone Co.	15 11‡	..	16 0§
Best Dosthill Broken Granite.			
Dosthill Granite Quarry Co., Ltd.	16 9	..	17 3
Hand-broken Rowley Regis.			
Rowley Regis Granite Quarries, Ltd.	17 0	..	16 6
Rainish Columnar Basalt.			
London Basalt Stone Co.	15 3‡	..	15 3§

‡ Machine-broken. § Hand-broken.

HANWELL.—For street lanterns and scroll irons, for the Urban District Council :—

—	Lanterns. 14-in.	15-in.	16-in.	Tee Bars, each.	Scroll Irons, each.
	£ s. d.	£ s. d.	£ s. d.	s. d.	s. d.
Pond & Co.*	0 19 9	1 0 9	1 1 9	1 0	2 10
H. S. Timpson	0 19 6	1 2 6	1 4 0	1 0	2 9
M. Duffield & Son	0 19 6	1 2 6	1 4 0	1 0	2 8
S. Pontifex & Co.	1 0 0	1 0 0	1 3 6	1 0	3 10
G. Waller & Son	1 0 0	1 0 0	1 3 6	1 0	3 10
Empire Intensified Gas Light Co., Ltd.	1 0 0	1 0 0	1 3 6	1 0	3 10
H. Green & Co.	1 1 0	1 2 6	1 3 6	1 0	4 9
W. Edgar	1 1 9	1 2 9	1 3 9	1 0	3 6
S. Wright	1 2 0	1 4 0	1 8 0	2 6	4 6
W. Edgar	1 2 0	1 3 0	1 4 0	1 0	3 3
F. Bird & Co.	1 2 9	1 4 9	1 6 0	0 9	3 10
W. M. Still & Co.	1 3 6	1 5 0	1 7 6	1 0	3 6
H. Greene & Sons, Ltd.	1 7 0	1 8 6	1 10 0	0 6½	4 3
W. H. Tilley	1 7 6	1 9 0	1 11 9	1 4	3 3

HANWELL.—For the erection of a public library, for the Urban District Council Mr. J. Gibbs Thomas, architect. Quantities by architect :—

Wilcocks & Co.	£3,125 0	W. J. Dickens	£2,670 0
Chambers Bros.	2,969 0	E. F. McCarthy	2,665 0
Patman & Fotheringham	2,873 0	J. Shelbourne & Co.	2,642 0
W. Braybrook General Builders, Ltd.	2,836 10	A. Faulks	2,626 0
	2,719 0	Y. J. Lovell	2,590 0
W. J. Renshaw	2,697 0	Foster Bros.	2,568 0
Shurmur & Sons, Ltd.	2,691 0	G. H. Gibson	2,548 0
A. & B. Hanson	2,684 0	Sims & Wood, 42, Gray's-inn-road, W.C.*	2,460 0

HANWELL.—For lamp columns, for the Urban District Council :—

	Each.		Each.
W. C. Pennington & Co.‡	—	Haward Bros.	£1 9 0
H. Greene & Sons, Ltd.	£2 3 0	J. Williamson & Co.	1 8 0
M. A. Warburg	2 1 3	Pond & Co.	1 8 0
A. Graham§	2 0 0	S. Wright	1 7 6
Falkirk Iron Co.	1 19 6	Turbington Foundry Co.	1 7 6
A. Graham‖	1 17 6	Baxendale & Co.	1 7 6
G. Waller & Son	1 16 0	H. S. Timpson	1 7 0
D. King & Sons	1 15 4	Parsons & Wills	1 6 9
M. Duffield & Sons	1 14 6	H. Green & Co.	1 6 0
Measures Bros., Ltd.	1 14 3	Municipal Foundry & Engineering Co.	1 6 0
W. Lucy & Co., Ltd.	1 12 0	S. Macintosh & Son, Ltd.	1 5 9
W. Edgar	1 11 6	F. Bird & Co.	1 5 3
W. Boydell & Sons	1 11 6	S. Pontifex & Co.	1 5 0
W. H. Tilley	1 11 0	H. Whyte, Ltd.*	1 4 6
W. J. Oakley	1 10 0		
J. Needham & Sons	1 9 0		

‡ As per enclosed prices. § At rate of twenty-two per week. ‖ At rate of eleven per week.

HERNE HILL.—For superstructure of the new Baptist church. Mr. J. William Stevens, F.S.I., A.R.I.B.A., architect, 21, New Bridge-street, E.C. Quantities supplied :—

	Amount.		Time.
C. Ansell	£6,404	..	9 months.
G. Gough & Co.	6,390	..	10 „
Holloway Bros.	6,377	..	10 „
Higgs & Hill	6,293	..	6 „
W. V. Goad	6,148	..	12 „
J. Carmichael	6,143	..	12 „
J. Smith & Sons	6,099	..	—
Holliday & Greenwood	6,071	..	9 „
F. & F. H. Higgs	5,990	..	10 „
J. & C. Bowyer	5,989	..	—
Battley, Sons, & Holness	5,977	..	9 „
Smith & Sons	5,750	..	10 „
Foster Bros.	5,625	..	12 „
H. Young, Herne Hill*	5,595	..	8 „
F. J. Coxhead	5,584	..	—

HULL.—For Baptist church, Beverley-road. Messrs. George Baines, F.R.I.B.A., & R. Palmer Baines, architects, 5, Clement's-inn, Strand, London :—

Kingerlee & Sons	£7,547 0 0	J. T. Levitt	£6,055 0 0
Armitage & Hodgson	6,561 8 0	M. Harper	6,044 0 0
T. Goates	6,260 0 0	Quibell, Son, & Greenwood, Ltd.	5,862 11 0
G. Houlton	6,190 0 0	H. T. Arnott, 17, Walker-st., Hull*	5,031 7 0
Coulson & Lofts	6,168 18 6		
Bowman & Sons	6,090 0 0		

ILFORD.—For extension of buildings at electric lighting station, Ley-street, for the Rural District Council. Mr. H. Shaw, Surveyor, Town Hall, Ilford :—

F. & A. Willmott, The Hill, Ilford* £1,243

ILFORD.—For the erection at the electricity works, Ley-street, of steel coal bunkers, for the Urban District Council. Mr. A. Shaw, M.Inst.C.E., Electricity Works:—

Jukes, Coulson, Stokes, & Co., Bromley-by-Bow £123

KING'S LYNN.—For making-up new streets on the Spread Eagle Estate, for the Corporation. Mr. H. J. Weaver, Borough Surveyor, King's Lynn:—

Renant Bros.	£298	J. Medwell, Railway-road, King's Lynn*	£195
J. J. Bone	259		

LEWISHAM.—For the kerbing, paving, &c., of the following, for the Lewisham Borough Council:—

Sandrock-road (part of).

Harvey Bros.	£549	H. Woodham & Sons	£375
B. Martin	395	Fry Bros.*	344
J. Mowlem & Co., Ltd.	385		

Radford-road (part of).

Harvey Bros...	£935 0 0	H. Woodham & Sons	£569 0 0
J. Mowlem & Co.	608 0 0	Fry Bros.*	550 0 0
B. Martin	602 11 5		
W. Pearce	582 0 0		

Maddin-road (part of).

Harvey Bros. ..	£349 0 0	Fry Bros.	£264 0 0
J. Mowlem & Co.	299 0 0	B. Martin.....	260 0 6
H. Woodham & Sons	265 0 0	W. Pearce*	245 0 0

Garthorne-road.

Harvey Bros..	£1,943 0 0	Fry Bros.....	£1,518 0 0
J. Mowlem & Co., Ltd. ..	1,593 0 0	W. Pearce ..	1,495 0 0
B. Martin....	1,573 17 7	H. Woodham & Sons* ..	1,452 0 0

Stondon Park.

Harvey Bros.	£3,376 0 0	H. Woodham & Sons	£2,117 0 0
J. Mowlem & Co., Ltd.....	2,290 0 0	B. Martin	2,036 1 9
W. Pearce	2,124 0 0	Fry Bros.* ..	1,981 0 0

Overcliff-road (part of).

Harvey Bros.	£1,240 4 8	H. Woodhan & Sons	£661 0 0
B. Martin ..	695 10 0	Fry Bros.*	630 0 0
J. Mowlem & Co., Ltd. ..	680 0 0		

Stondon Park.

J. Mowlem & Co., Ltd.....	£729 0 0	Patent Victoria Stone Co., Ltd.....	£594 16 6
B. Martin	715 19 0	J. Ellis & Sons, Ltd.....	588 8 9
Adamant Stone & Paving Co., Ltd.....	713 0 0	Preston Granite Concrete Co., Ltd.....	585 0 0
Fry Bros.	667 0 0	Empire Stone Co.*.....	577 0 0
Harvey Bros.	663 15 3		
H. Woodham & Sons	605 10 0		
W. Pearce	596 0 0		

Overcliff-road (part of).

J. Mowlem & Co., Ltd.....	£290 0 0	J. Ellis & Sons, Ltd.....	£233 3 0
Adamant Stone & Paving Co., Ltd.....	283 0 0	Empire Stone Co.	232 10 0
B. Martin	271 10 0	Preston Granite Concrete Co., Ltd.....	230 0 0
Fry Bros.	270 0 0	Patent Victoria Stone Co., Ltd.*	209 15 0
H. Woodham & Sons.....	243 0 0		
Harvey Bros...	241 1 9		

PLYMOUTH.—For the erection of Sherwell Mission Hall, Clare-place, Plymouth, for the Sherwell Congregational Church, Plymouth. Mr. J. Harvey, architect and surveyor, 5, Courtenay-street, Plymouth. Quantities by the architect:—

T. May	£1,025	Pearce Bros.....	£857
W. Palk & Son....	998	J. H. Palmer	847
J. Partridge, jun...	985	J. Griffin	815
W. T. Stevenson ..	915	A. Andrews, Plymouth*.....	783
G. B. Turpin.....	876		

ST. ALBANS.—For the erection of a pair of semi-detached houses, at Bedford Park-road, St. Albans. Mr. Harold Goslett, A.R.I.B.A., architect, 28, Theobald's-road, W.C.:—

Gough & Co.....	£1,949	Vail & Williamson, St. Albans†	£1,353
C. Miskin & Sons..	1,650		

SANDAL MAGNA (Wakefield).—For erecting stables and other buildings, for the Urban District Council. Mr. F. Massie, F.S.I., Tetley House, Wakefield. Quantities by the architect:—

Builder: T. Lee, Howard-street, Wakefield*	£379 13 6
Joiner: Appleyard & Dickinson, Lofthouse, near Wakefield*	96 0 0
Plumber: H. Gillott, Cheapside, Wakefield*	15 9 6
Plasterer: H. Sanderson, Wesley-street, Ossett*	7 0 0
Painter: Broadbent & Son, Kirkgate, Wakefield*	5 7 6
Slater: Pickles Bros., 66, Park-lane, Leeds*	56 0 0

WALSALL.—For additional buildings for boys and girls, Lichfield-street, for the Governors of Queen Mary's School. Messrs. Bailey and McConnal, architects, Bridge-street, Walsall:—

W. Sapcote & Sons	£5,874	M. A. Lynex.....	£5,275
E. Hadley & Sons	5,663	W. Kindrick & Sons	5,269
S. Warburton	5,663	E. Giles & Son....	5,178
J. T. Beech	5,491	J. Herbert.....	5,156
W. & J. Webb	5,484	F. L. Jones	5,100
T. J. Mason	5,475	T. Hardy	5,078
H. Willcock & Co.	5,419	W. Westance	5,075
H. J. Petts	5,390	H. W. Gibbs.....	5,070
J. Dallow & Sons	5,390	G. Goodwin	5,028
J. G. Foster, jun.	5,350	Gowing & Ingram	5,027
Brockhurst & Wood	5,350	G. H. Marshall....	4,999
E. Chatwin	5,315	S. Wootton, Bloswick*.....	4,998
Har'ey & Son	5,313		
T. Mason	5,305		

WHITCHURCH (Wales).—For 430 yds. of earthenware pipe sewer, Velindre and Tynypwll roads, for Llandaff and Dinas Powis Rural District Council. Mr. J. Holden, Engineer, Council Offices, Llandaff-chambers, 35, St. Mary-street, Cardiff:—

Public Works Co.	£227 8 5	A. G. Collins..	£203 18 9
E. Williams ..	216 1 8	E. Osmond & Sons, Ely, Glam.*	177 8 9
F. Ashley	206 11 2		

YNYSBOETH (Wales).—For erecting Welsh Methodist vestry, not chapel, for the Welsh Calvinistic Methodist Denomination. Messrs. Ivor Jones & T. E. Richards, architects, 18, St. Mary-street, Cardiff:—

J. Parry, Penrhiwceiber, Glamorganshire, Wales* £568

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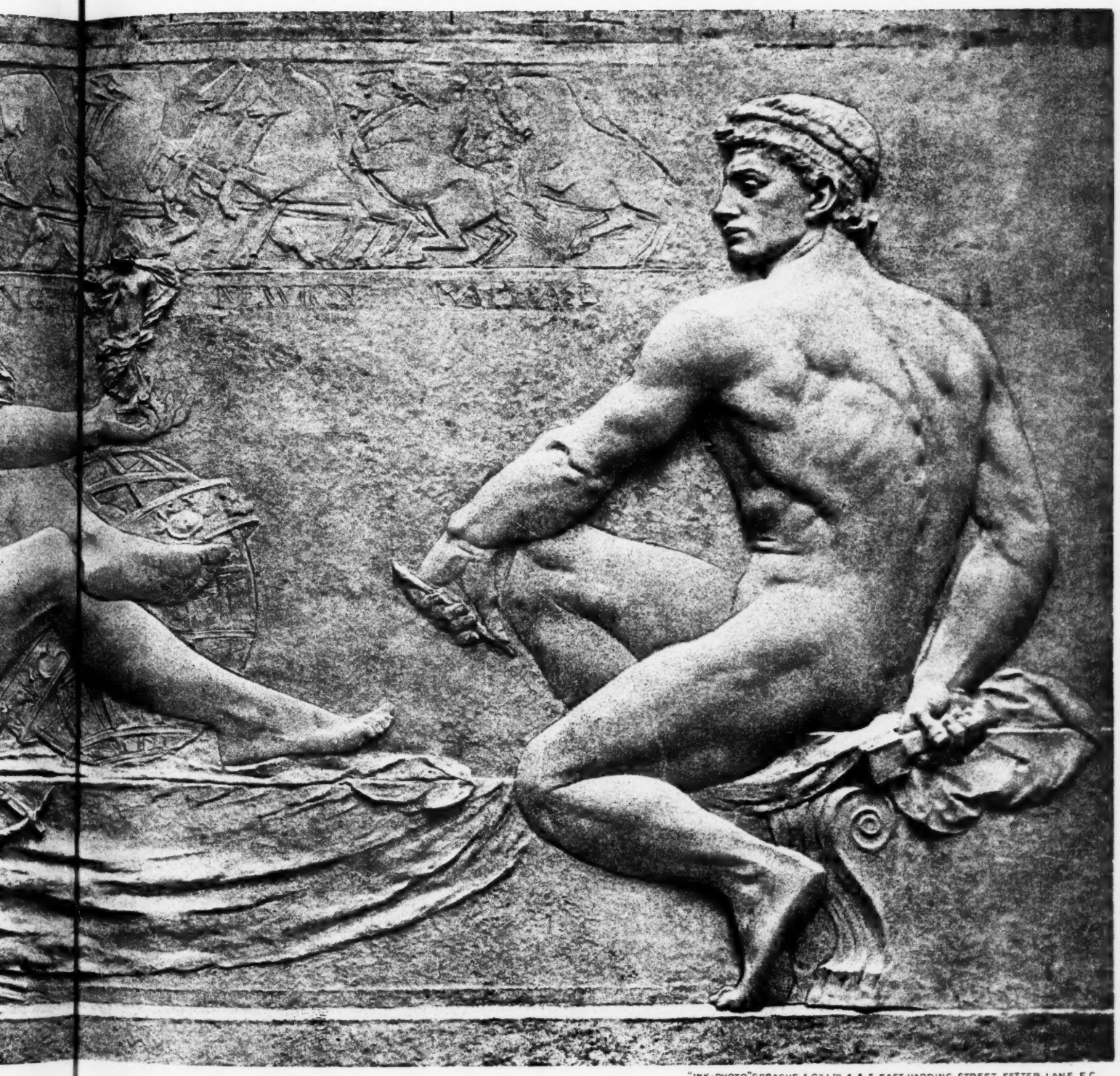

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for

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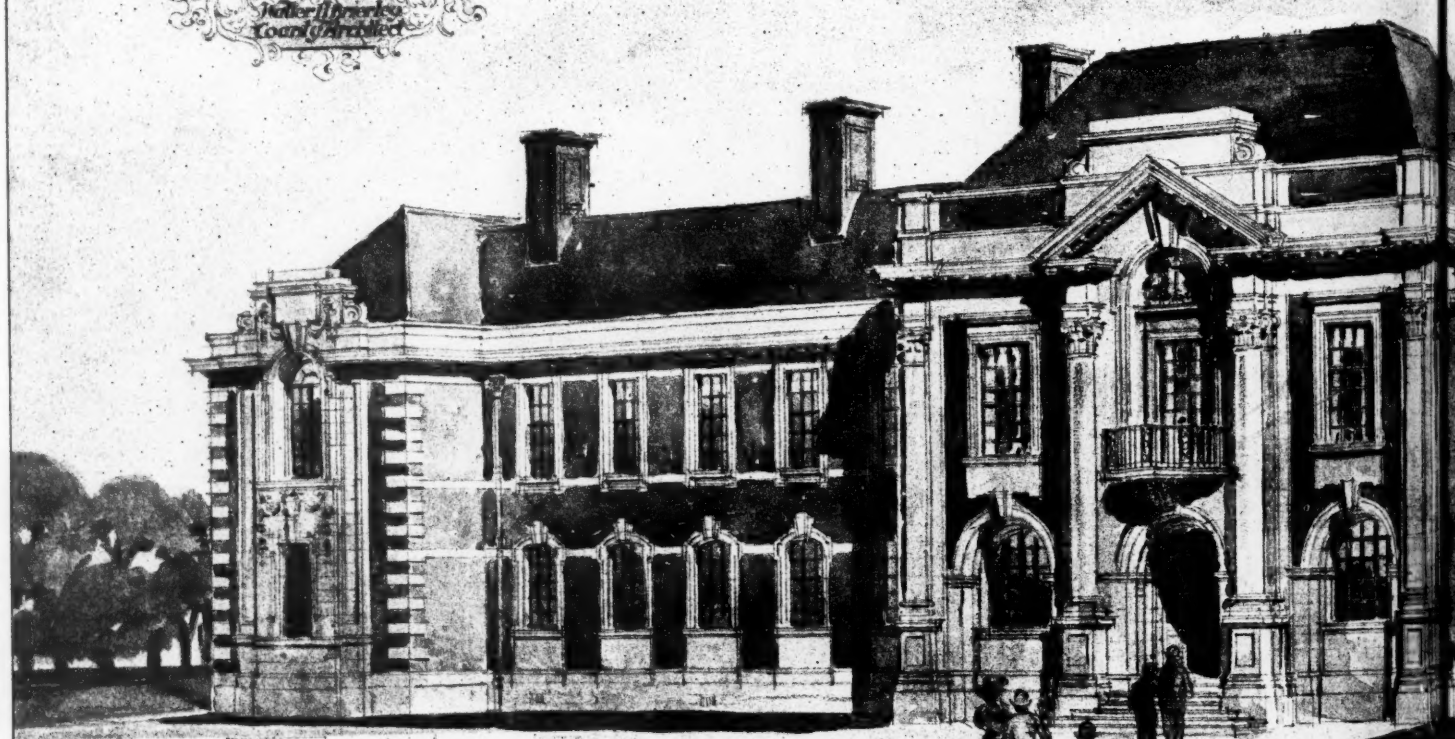
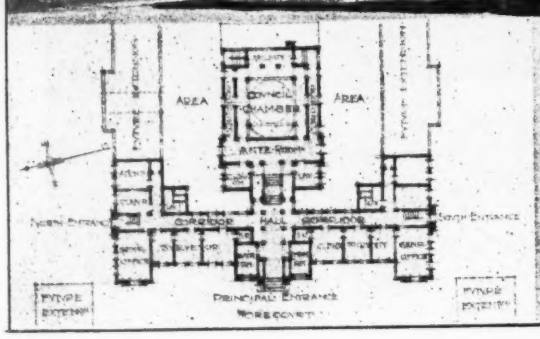
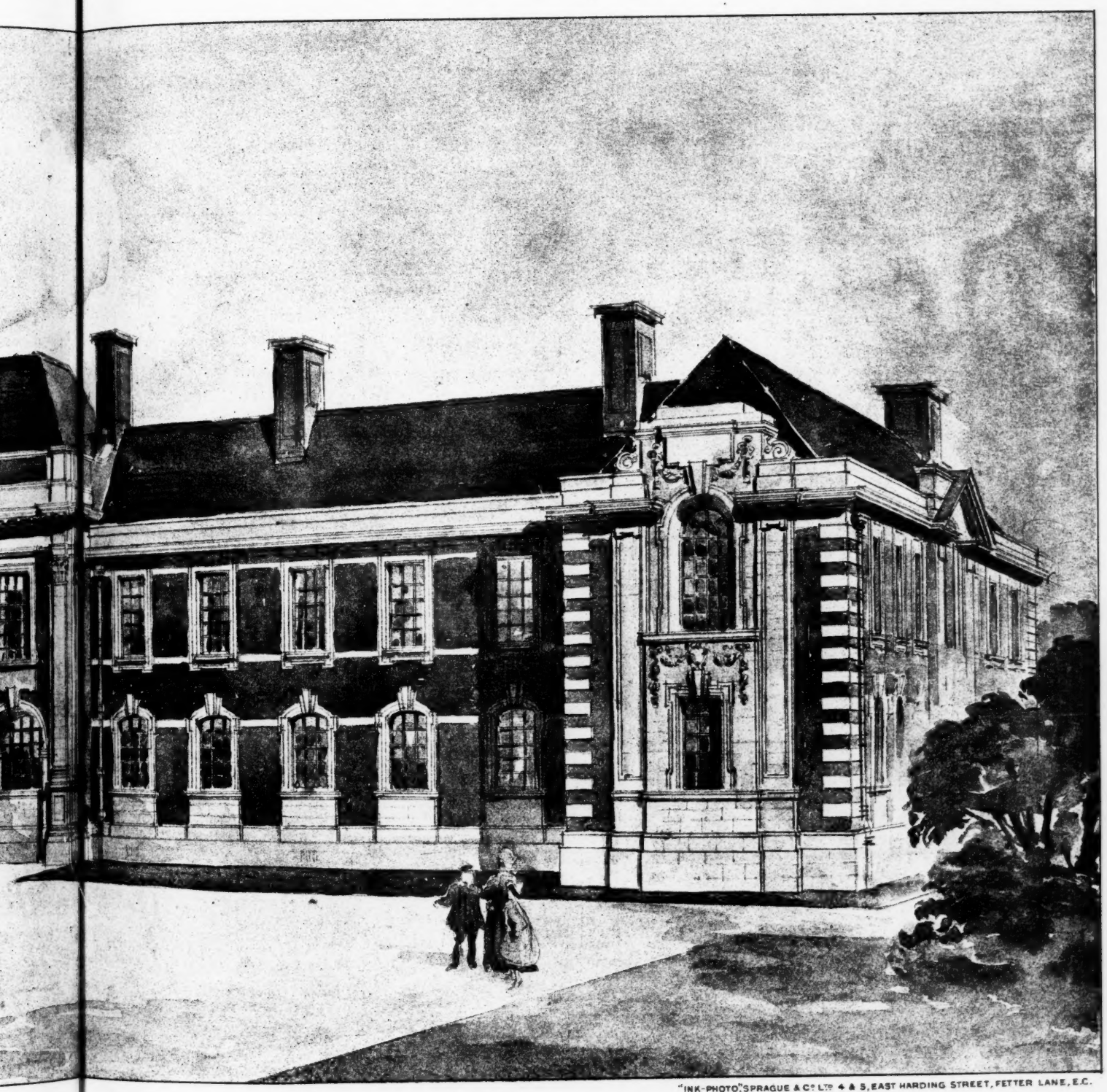
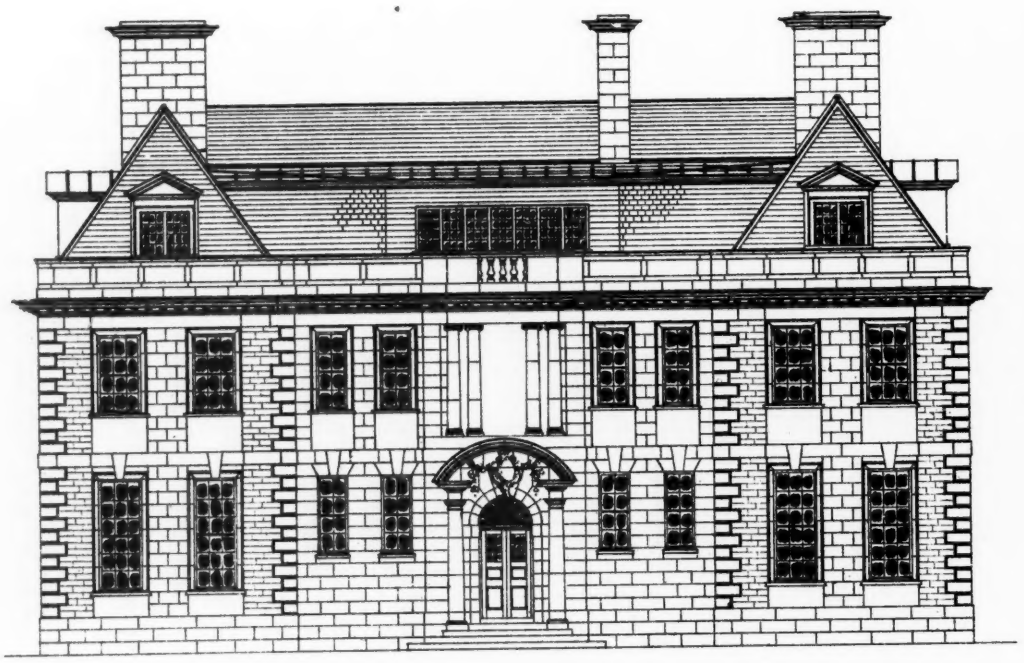


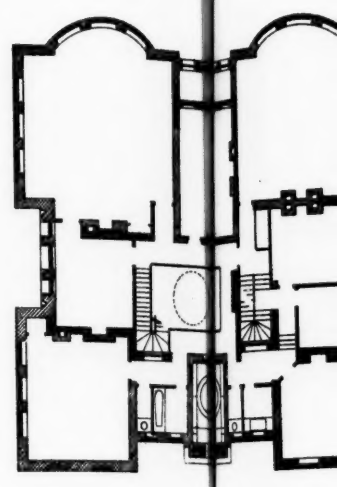




"INK-PHOTO" SPRAGUE & Co LTD 4 & 5, EAST HARDING STREET, FETTER LANE, E.C.

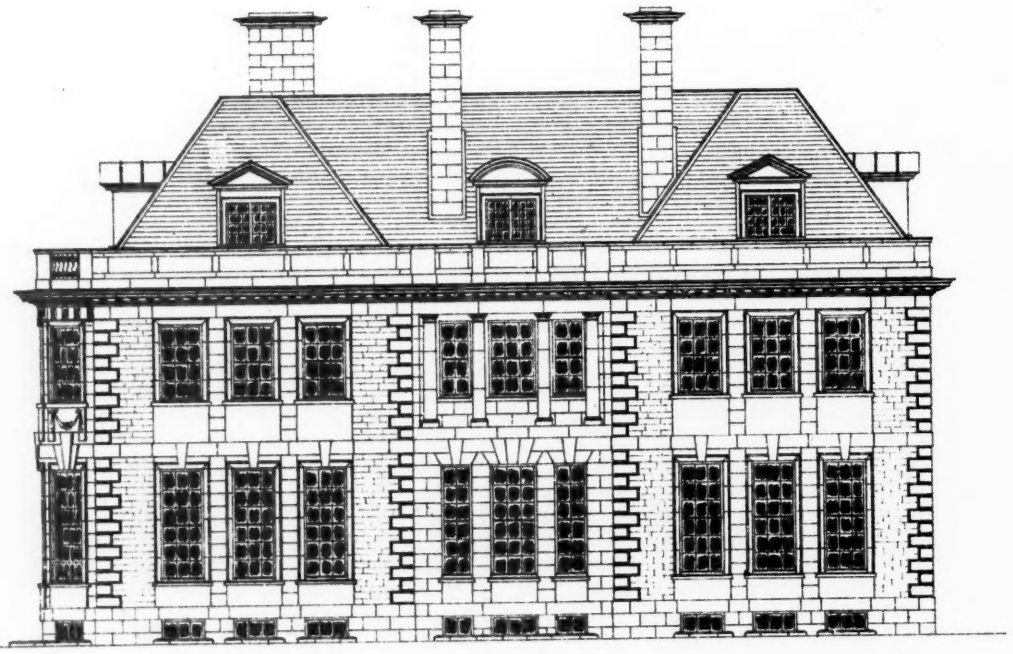


EAST·ELEVATION·

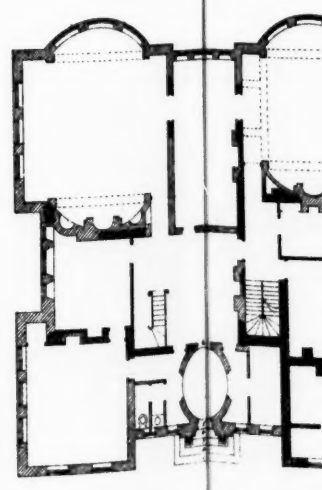


FIRST·FLOOR·PLAN·

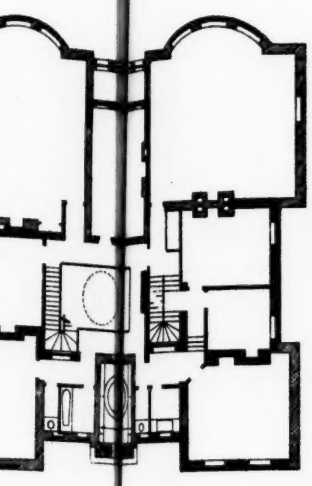
DESIGN·FOR·PENN·
HOVSE·WESTON·
NEAR·BATH·
1904.



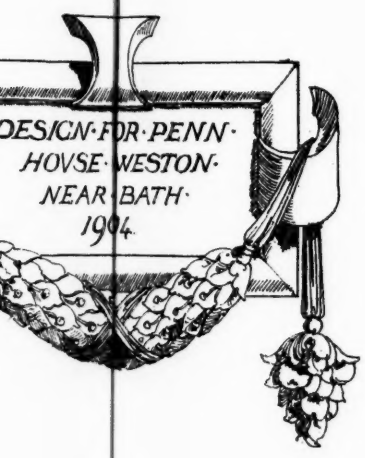
SOVTH·ELEVATION·

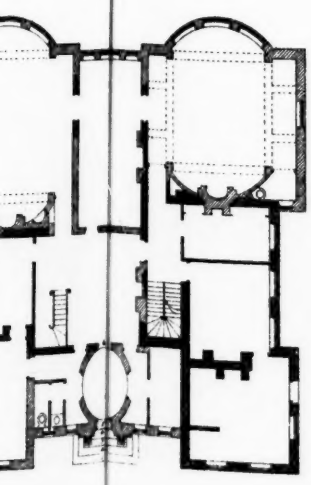


GROVND·FLOOR·PLAN·

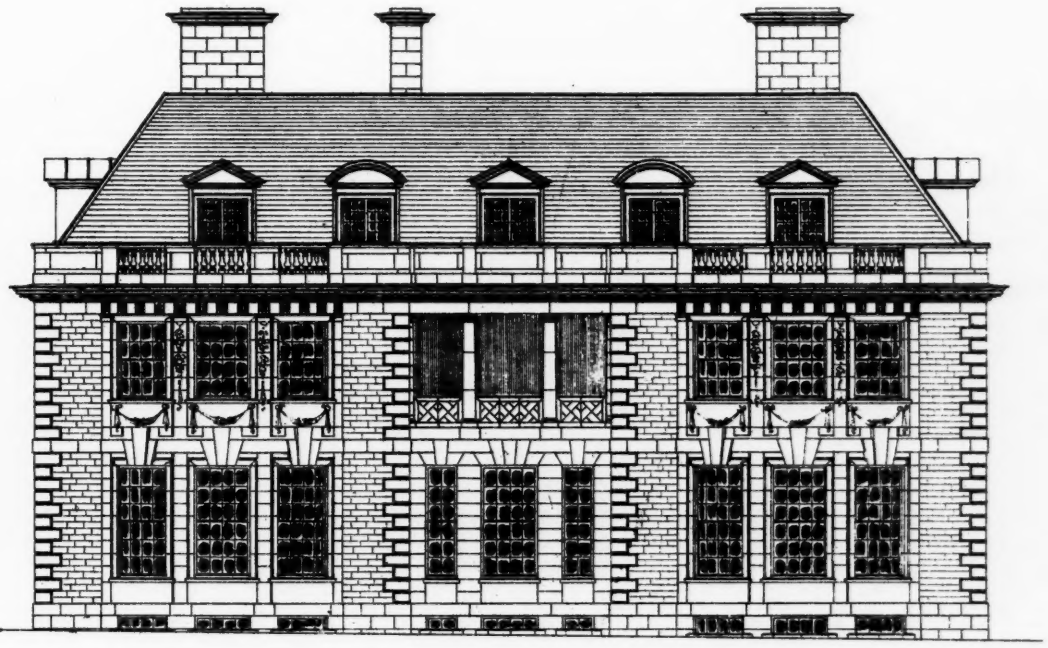


FIRST·FLOOR·PLAN·

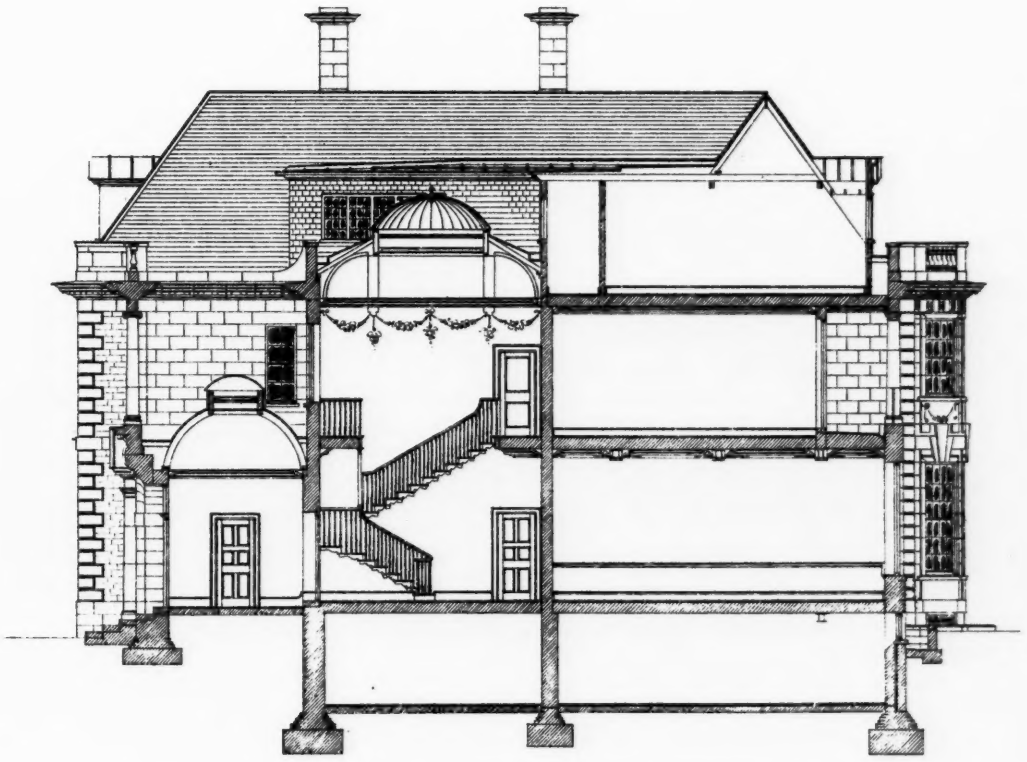




GROUND·FLOOR·PLAN·



WEST·ELEVATION·

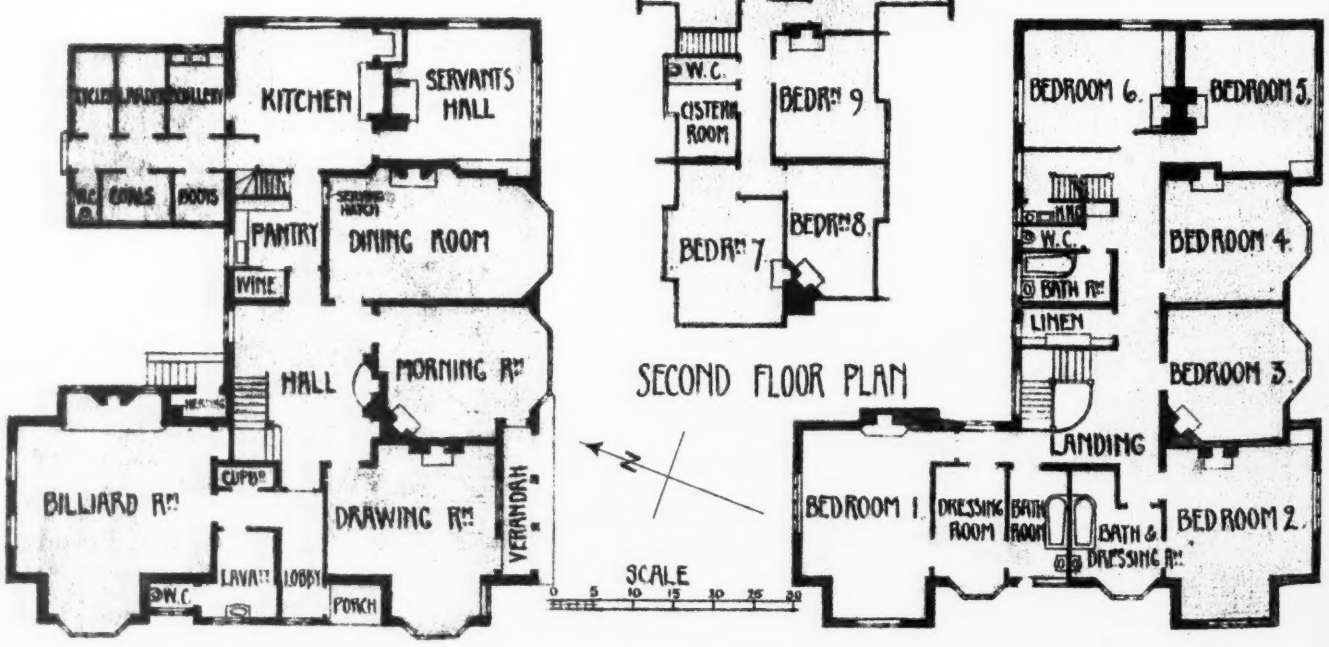


CROSS·SECTION·LOOKING·SOUTH·

PHOTO-LITHO. SPRAGUE & Co LTD 4 & 5, EAST HARDING STREET, FETTER LANE, E.C.

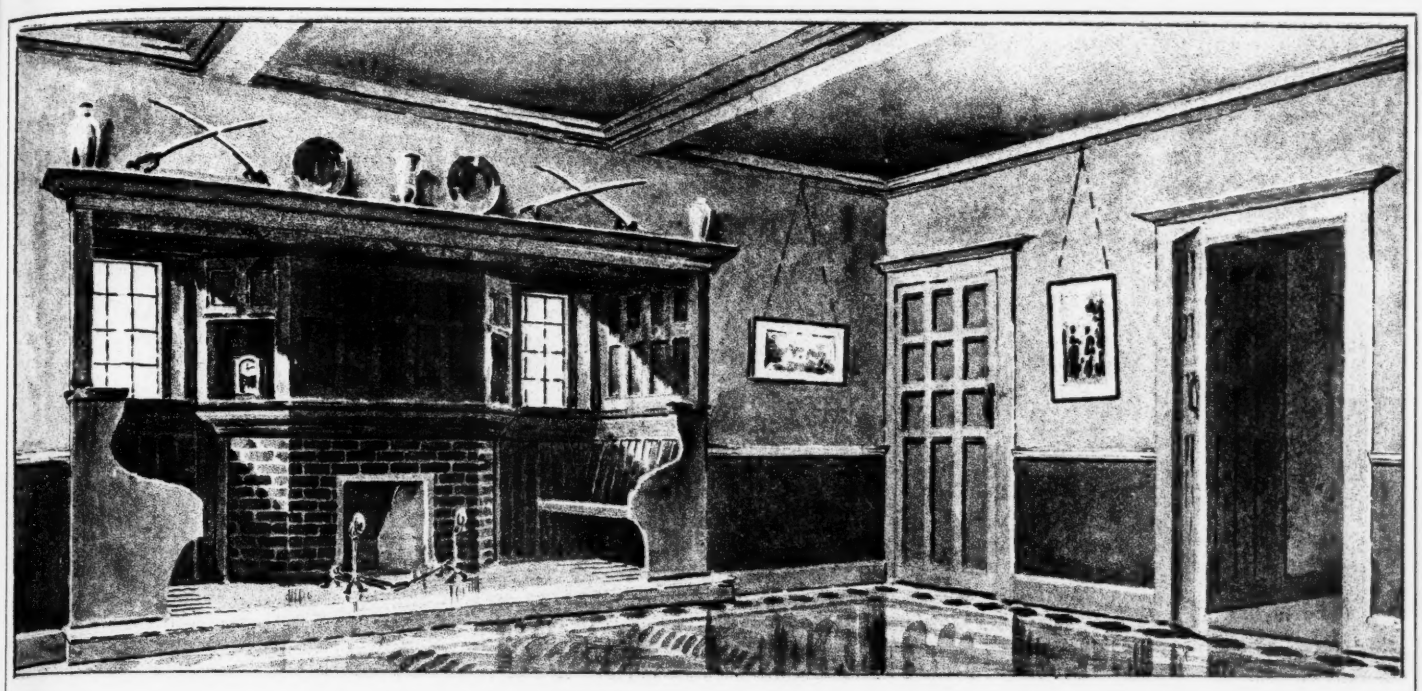
GARDEN FRONT: SOUTH-EAST:

"BLACKWOOD HOUSE" BYFLEET, SURREY.

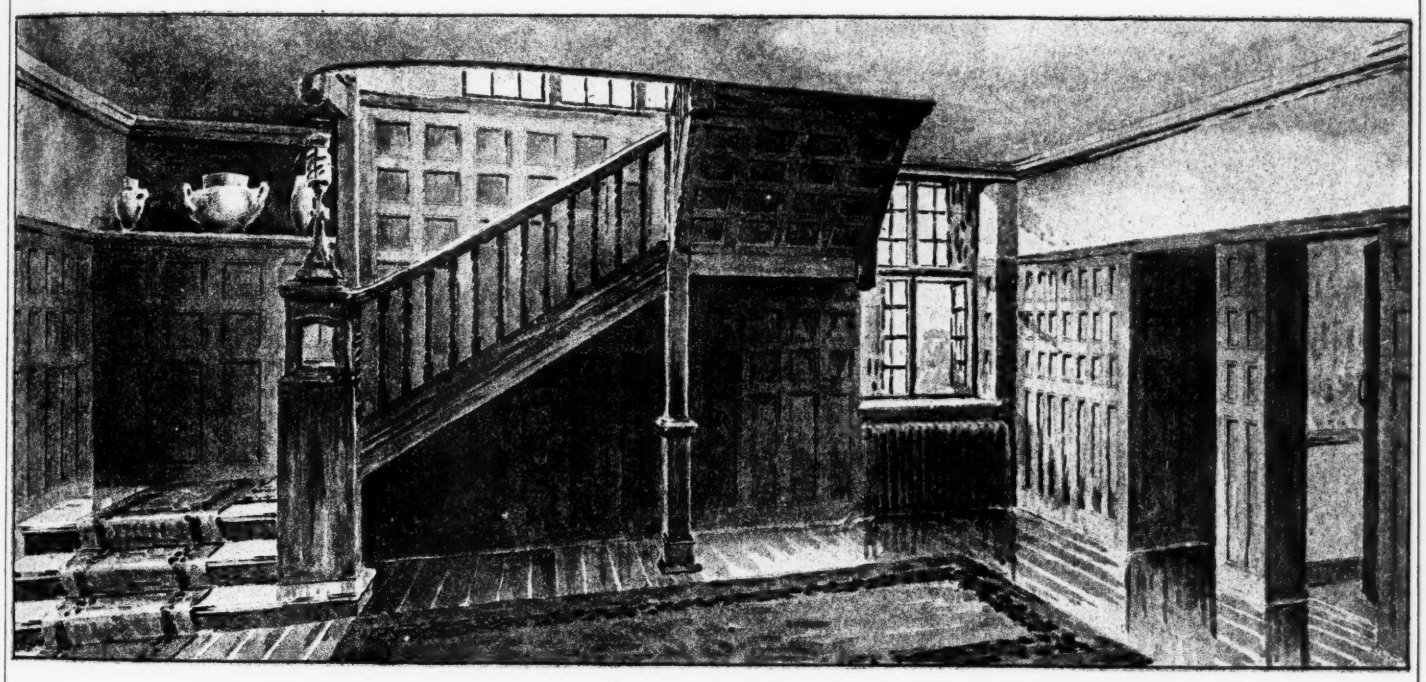


MR G.L. SUTCLIFFE A.R.I.B.A. ARCHITECT.

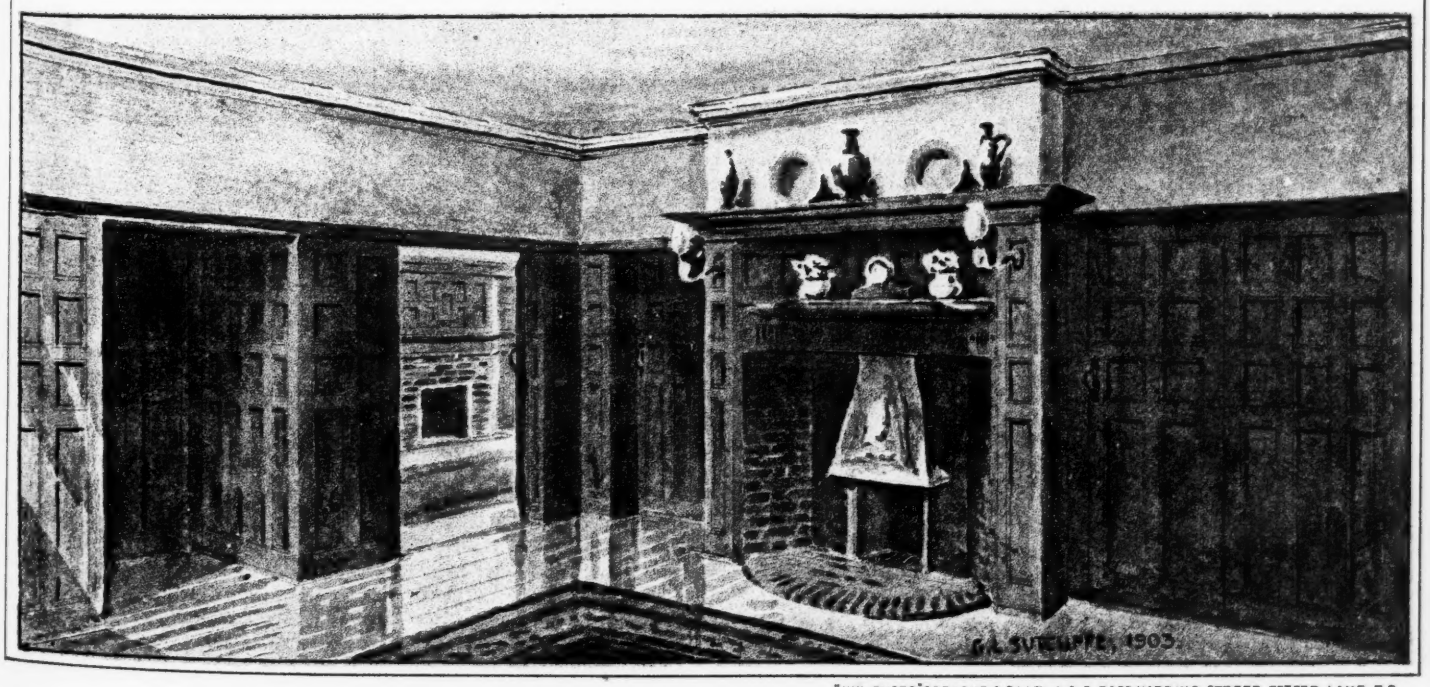
"INK-PHOTO" SPRAGUE & Co LTD 4 & 5, EAST HARDING STREET, FETTER LANE, E.C.



BILLIARD-ROOM: STAIRCASE: AND: HALL:



BLACKWOOD HOUSE: BYFLEET: SURREY:



"INK-PHOTO." SPRAGUE & Co LTD 4 & 5, EAST HARDING STREET, FETTER LANE, E.C.